OPEN ACCESS

KING'S College LONDON

King's Research Portal

DOI:
10.1016/j.worlddev.2018.07.002

Document Version
Peer reviewed version

Link to publication record in King's Research Portal

Citation for published version (APA):
Roy, S., Morton, M., & Bhattacharya, S. (2018). Hidden Human Capital: Self-efficacy, Aspirations and Achievements of Adolescent and Young Women in India. *WORLD DEVELOPMENT*, *111*, 161-180. https://doi.org/10.1016/j.worlddev.2018.07.002

Citing this paper
Please note that where the full-text provided on King's Research Portal is the Author Accepted Manuscript or Post-Print version this may differ from the final Published version. If citing, it is advised that you check and use the publisher's definitive version for pagination, volume/issue, and date of publication details. And where the final published version is provided on the Research Portal, if citing you are again advised to check the publisher's website for any subsequent corrections.

General rights
Copyright and moral rights for the publications made accessible in the Research Portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognize and abide by the legal requirements associated with these rights.

•Users may download and print one copy of any publication from the Research Portal for the purpose of private study or research.
•You may not further distribute the material or use it for any profit-making activity or commercial gain
•You may freely distribute the URL identifying the publication in the Research Portal

Take down policy
If you believe that this document breaches copyright please contact librarypure@kcl.ac.uk providing details, and we will remove access to the work immediately and investigate your claim.

Download date: 05. May. 2023

Hidden Human Capital: Self-efficacy, Aspirations and Achievements of Adolescent and Young Women in India*

Sanchari Roy (King's College London)

Matthew Morton (University of Chicago)

Shrayana Bhattacharya (World Bank)

11 July, 2018

Accepted at *World Development*

Abstract

This paper studies the role of non-cognitive skills like self-efficacy in explaining the education and employment aspirations and outcomes of adolescent and young women in Jharkhand, India. We find that self-efficacy is an important correlate of the educational and employment aspirations of these women, and ultimately, of their actual attainments. This suggests that such "hidden" forms of human capital may serve as critical targets for interventions aimed at altering young women's educational and economic trajectories. We also examine factors that correlate with young women's level of self-efficacy, and find that an "enabling" and supportive family and community environment appears to be important.

Key words: self-efficacy; aspirations; women; employment; education; India

JEL classification: I20, I31, Z00

* We thank the editor and two anonymous referees for their feedback and comments. This work was financially supported by aid from UK Government's Department for International Development (DFID). The authors would like to thank the Government of Jharkhand's Department of Women and Child Development and Social Security (DWCDSS) for their valuable insights and guidance during this project. They also thank Amanbir Singh, Pravesh Kumar, Divya Balyan, Vatsala Shreeti, Kamlesh Singh, Mohita Junnarkar for their insights and research support. D-COR Consulting, Inc. conducted all of the primary data collection. The paper and the broader research initiative also benefited from technical comments and contributions from John Blomquist (World Bank), Maitreyi Das (World Bank), Robert Blum (Johns Hopkins University), Emma Samman (Overseas Development Institute), Anna Frutero (World Bank), Andy Mckay (University of Sussex), Rohini Pande (Harvard University), Charity Troyer (Harvard University), Renu Singh (Young Lives India), and Sarah Elizabeth Haddock (World Bank). The findings, interpretations and conclusions expressed in this paper are entirely those of the authors, and do not necessarily reflect the UK Government's, or the World Bank Group's, official policies. Corresponding author: Sanchari Roy; email: sanchari.roy@kcl.ac.uk; address: Department of International Development, King's College London, Strand, London WC2R 2LS, UK

1. Introduction

The existing literature extensively documents positive correlations between human capital and economic outcomes. Traditionally, such studies of human capital have primarily centered on assets that can be readily observed, such as physical health or documented educational attainment (see Deaton, 2003; Angrist and Lavy, 1999; Duflo, 2001; Miguel and Kremer, 2004; Nehru et al., 1995; Baldacci et al., 2008). This provides a rather limited perspective in light of the broad definition of human capital as the stock of skills that the labour force possesses and is regarded as a resource or asset (Goldin, 2016).

Yet a mounting body of international evidence points to the importance of non-cognitive skills, especially among young people, in contributing to various outcomes ranging from academic performance during adolescence (Becker and Luthar, 2002) to earnings (see review in Goodman *et al*., 2015) and lower financial distress in adulthood (Kuhnen & Melzer, 2017). Non-cognitive skills are diversely defined by the literature, but they broadly involve thoughts, attitudes, and behaviors that enable individuals to successfully interact with others and work productively towards things that they value while managing challenges and stressful life events.[i] Existing evidence appears to suggest significant benefits of higher non-cognitive skills in youth for later-life outcomes and opportunities. However, much of this evidence is obtained in the context of developed countries such as the United States (Cunha and Heckman, 2008; Heckman *et al*., 2006), Sweden (Lindqvist and Vestman, 2011), Australia (Carrol *et al*., 2009), United Kingdom, Germany, etc. The importance or relevance of non-cognitive skills in the context of poorer, developing countries remains unclear and requires further examination, especially given the significant binding constraints young individuals in such countries face in terms of access to education and labour markets to begin with.

This paper attempts to fill this gap by analyzing the relationship between non-cognitive skills and the education and labour market aspirations and outcomes of female youth in India. Our focus is first on aspirations in these two domains as previous studies have argued that adolescent aspirations for the future are important predictors of adult attainment. Individuals with high aspirations are able to "visualize the future and engage in forward-looking behavior" (Dalton, Ghosal and Mani, 2016). For example, it has been shown that young people with high employment aspirations are more likely to enter a professional career in adulthood (Clausen, 1993; Mello, 2008; Schoon, Martin, and Ross, 2007; Schoon and Parsons, 2002). In contrast, a number of studies in Australia and the United Kingdom have identified a 'lack of aspiration' as being one of the key barriers to participation in further education for lower-income students (Bradley *et al.* 2008; James *et al*. 2008; Goodman and Gregg, 2010). Hence, despite their subjective nature, focusing on aspirations may be argued to constitute the first step in analyzing the overall impact of non-cognitive skills on adult attainments. In addition, we also examine the relationship between non-cognitive skills and *actual* outcomes of young women in the education and labour markets, in order to complement our aspirations analysis.

The primary dimension of non-cognitive skills we focus on in this paper is self-efficacy. In social psychology theory, self-efficacy refers to an individual's self-belief that they can accomplish a given task and cope with life's challenges (Bandura, 1977; 1997). Self-efficacy has been recognized as an important constituent of psychological empowerment (Zimmerman, 2000) and regulates aspirations, motivation and, ultimately, achievements (Bandura, 1993). It can be manifested through various elements of personal behavior, such as how well a person perseveres in the face of adversity, whether they have an optimistic or pessimistic attitude about their future, and their will to engage in behaviors or tasks that may be perceived as challenging. In this paper, we use a global measure of

self-efficacy rather than a task-specific measure given the relevance of examining the role of non-cognitive skills as they apply to a range of life domains. In addition, we also look at self-reported measures of hope/optimism as an alternative, though related, expression of non-cognitive skills.

We use a recent World Bank survey of close to 3,000 adolescent and young women in the low-income Indian state of Jharkhand for the purpose of our analysis. It is a well-known fact that like many other outcomes, education and employment outcomes of women in India lag those of men – in part due to unequal access of women to such opportunities, but also due to gender attitudes that often dampen women's aspirations in these domains. This is particularly true in the northern part of India, including Jharkhand, where patriarchal norms are strong and deeply entrenched. Hence, Jharkhand provides a unique opportunity to explore the role played by individual non-cognitive skills like self-efficacy in explaining such low aspirations and outcomes of female youth in India, as well as assess whether such skills, when enhanced, may potentially outweigh negative social attitudes to ultimately boost female outcomes.

Our key findings are as follows: Firstly, self-efficacy appears to be one of the key correlates of aspiration among young women (aged 15-24) in Jharkhand, both for education and employment. A one standard deviation increase in a standardized self-efficacy score is associated with a 0.73 increase in the number of years young woman desires to study and a 0.07 percentage point increase in the likelihood that she aspires to be engaged in paid employment outside home as an adult.

Secondly, we also find that self-efficacy is significantly correlated with actual education and employment outcomes. However, the effect of self-efficacy disappears once aspirations are introduced into the model. Taken together, these results suggest that the

importance of self-efficacy for actual education and employment outcomes is largely mediated through increased aspirations. In addition, knowing other successful businesswomen and feeling connected to the broader social network play important and independent roles in facilitating education and employment outcomes of these young women.

Finally, in terms of key correlates of self-efficacy, we find that individual and household-level factors like age, previous training experience, and an "enabling" environment i.e. one where girls enjoy family/social support, feel connected and have educated parents and other successful role models to look up to, appear to be important.

Since this is a cross-sectional analysis, the results of this paper are not to be interpreted in any causal way. Instead, the aim of the paper is to identify key correlates of education and employment aspirations of youth in India in order to inform the design of interventions aimed at boosting their educational and labor market outcomes. Having said that, our results for self-efficacy and aspirations are robust to using an instrumental variables strategy to address problems of potential endogeneity (see Appendix B for details).

Our paper is related to two broad literatures. Firstly, it relates to the social psychology literature examining the role of non-cognitive skills such as self-efficacy in explaining an individual's life outcomes. For adolescents, boosting self-efficacy has been shown to have broad implications for various spheres ranging from academic achievement (Carroll *et al*., 2009), physical activity (Motl *et al*., 2007) to contraception use (Longmore *et al*. 2003), alcohol use (Watkins *et al*., 2006) etc., career aspirations (Bandura *et al*. 2001), unemployment and job satisfaction (Pinquart *et al*., 2003). However, most of this existing evidence is obtained in the context of developed countries. We contribute to, and extend,

this literature by studying the importance of self-efficacy in determining adolescent aspirations and outcomes in a developing country context, India.

Secondly, our paper also speaks to the significant development literature on human agency and empowerment, and their associations with individual outcomes and development (e.g. Alkire, 2002; 2005; 2009; Alsop *et al*. 2006; Hoddinott and Haddad (1995); Ibrahim and Alkire, 2007; Kabeer, 1999; Quisumbing and Maluccio, 2003 etc.). Many of these studies draws from the human development and capability approach developed by Amartya Sen (Sen, 1992; 1993; 1999), where Sen describes agency and empowerment as "process freedoms" that "enhance the ability of people to help themselves and also to influence the world" (Sen, 1999). Definitions of empowerment and agency vary widely in the literature (Alsop and Heinsohn, 2005; Ibrahim and Alkire, 2007), but there is relatively less focus on unpacking the psychological underpinnings of these concepts, in particular agency (Klein, 2014). We contribute to, and extend, this literature by directly examining the relationship between such psychological dimensions of agency (e.g. self-efficacy) and individual outcomes using a quantitative approach. Such an exploration might be useful to identify effective interventions aimed at boosting individual outcomes (Alkire, 2009). Indeed, recent work in psychology has lamented the lack of rigorous evidence on what kind of psychological interventions may be effective in boosting individual outcomes (Wilson, 2011), while Haushofer and Fehr (2014) points out the pressing need for such evaluations, especially in the context of developing countries. To the best of our knowledge, only a few papers have recently made a foray in this regard: Blattman *et al*. (2017) that combines psychological and cash-based interventions for criminally-engaged men in Liberia, Ghosal *et al*. (2015) that studies the impact of mitigating psychological constraints on investment behavior of sex workers in India, and Bernard *et al*. (2014) that examines the impact of intervention aimed at reshaping aspirations of Ethiopian farmers.[ii] Our paper fits

into this literature by providing further evidence on the importance of such psychological skills for a specific group of individuals, i.e. adolescent girls and young women, using observational data.

The remainder of the paper is organized as follows. Section 2 provides details of the context in Jharkhand while Section 3 describes the survey design and data collection of the World Bank Adolescent Survey in Jharkhand. Section 4 presents the descriptive statistics from the survey, while Section 5 outlines the empirical methodology used in this paper. Section 6 presents the main findings and discusses their implication. Section 7 concludes.

2. Context: Jharkhand

Jharkhand presents an important context to study the role of non-cognitive skills in advancing outcomes of vulnerable females. Created in 2000, the eastern state of Jharkhand ranks among the most lagging states in terms of poverty, female literacy, maternal mortality etc.

Figure 1: The state of Jharkhand in eastern India

The nutritional status of women is worse than in all other states of India, barring Bihar and Chhattisgarh. Strikingly, while female labor force participation has been declining nationally from 2004-5 to 2011-12 (12 percentage points), the drop has been even steeper for Jharkhand (18 percentage points), making Jharkhand one of the worst performing states in terms of women's labor force participation.

Targeting youth appears to be key to empowering women and addressing a major bottleneck to the state's competiveness. Adolescents and youth (ages 10-24) constitute nearly one-third of the state's population, and girls in this age group comprise 4.9 million (Census of India, 2011). As Figure 2 illustrates, demographics in India are heavily skewed towards the young, and this is even more the case in Jharkhand. As demographers underscore, this kind of "youth bulge" in the population can materialize either as a demographic dividend or a demographic burden for an economy. A large youth demographic can serve as a dividend when fertility rates fall and investments in youth support greater competitiveness, with a large and productive working-age population and smaller numbers of dependents. Yet the opposite can be true when high fertility rates (closely correlated with female disempowerment and illiteracy) prevail and a large youth population remains underproductive, underemployed, and prone to antisocial behaviors in the presence of idleness. Hence, not only are adolescence and youth a vital stage in the life cycle for human capital investments, but this is also a highly vulnerable period in which adolescent girls' and young women's lack of control over marriage and sexual and reproductive health decisions results in abruptly curtailed educational and economic opportunities. Hence, understanding which factors hold the key to improving young women's current outcomes and yielding higher returns later in the female life cycle is of utmost importance in this regard.

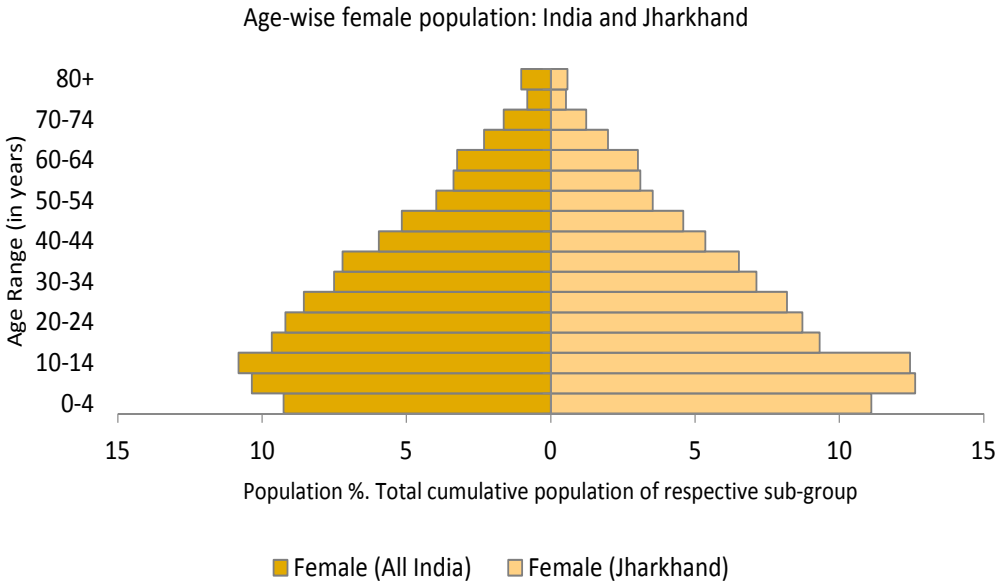

Figure 2. Jharkhand's youth demographic presents an acute need for human capital investments
Source: Census of India 2011

3. Survey Design and Data

3.1 Survey Design

This research is based on a cross-sectional survey conducted across the state of Jharkhand over an eight-week period in January to February 2015. Study participants were selected by using a multistage cluster sampling method. A minimum sample size of 3,057 individuals was needed for an assumed precision level of 5%, 80% power with Type 1 error of 5%, a design effect of 2, and a 10% non-response rate. To allow for subgroup estimates and over-sampling of urban areas for urban estimates, a sample size of 3,900 was targeted, and 3,942 were surveyed. Ultimately, 150 enumeration areas (EA) were randomly selected proportionate to size from a Census 2011 data set, out of which 105 were in villages (rural) and 45 were in towns (urban). Among the 150 selected EAs, one was inaccessible due to Maoist insurgence and was replaced using the same method.

Within each EA, 26 households were selected using a geographic house listing method. In case of large EAs having more than 300 households, EAs were divided into segments of 150 or more households, where one segment was randomly selected for house listing. In the rest of the EAs, all households in the EAs were listed. To ensure adequate representation across age groups, listed households were stratified according to the presence of at least one adolescent girl or young woman within the specified age groups (11-14, 15-17, 18-21, and 22-24). Interviewers used a randomization mechanism to pick a direction and the number of dwellings to pass in order to reach the first sampling unit. Interviewers then selected every other dwelling in that direction applying a systematic random sampling method until all 26 interviews within the EAs were completed. A total of 4,559 dwellings were approached; 3,942 (86.5%) participated in the study. All those that did not participate could not be reached after four attempts.

3.2 Data

Experienced interviewers, who were trained over six days on the study objectives and content, use of smartphones and interview technique, conducted one-to-one interviews. Pilot testing and mock interviews were conducted with all instruments. Oral rather than written consent was obtained because of the high illiteracy rate, but each household was left with a consent form with details of the study, respondents' rights and confidentiality, and contact details in case of any concerns. Female enumerators interviewed young women respondents. Supervisors analyzed the collected surveys on a daily basis, identifying outliers, giving feedback on data collection, and addressing any questions.

The survey is a multi-topic one and collected data on several aspects of the lives of adolescent girls and young women in Jharkhand. Key individual level demographic characteristics include their age, marital status, education status (attainment, attendance,

dropouts), employment status (firm type, place of work, sector, earnings) as well as a host of psychological variables.

Variable Measurement

The key non-cognitive variable that we consider is self-efficacy. Self-efficacy is measured using the General Self-Efficacy Scale (GSES), a 10-item global measure of self-efficacy, which measures self-beliefs in one's ability to cope with difficult demands and achieve objectives (Schwarzer & Jerusalem, 1995).[iii] The specific items were: "I can manage to solve difficult problems if I try hard enough"; "If someone tries to keep me from getting what I want, I can find a way to get what I want"; "It is easy for me to stick to my goals and reach them"; "I am confident that I could do a good job dealing with unexpected events"; "Thanks to my talent and skills, I know how to handle unexpected situations"; "I can solve most problems if I try hard enough"; "I can stay calm when facing difficulties because I can handle them"; "When I have a problem, I can find several ways to solve it"; "If I am in trouble, I can think of a solution"; "I can handle whatever comes my way". For each of these items, responses involved a Likert-style scale of five options, which we coded as equal to 0 if the answer was "never", "almost never" or "sometimes" and 1 if the answer was "fairly often" or "very often". These responses were then aggregated into a standardized z-score to generate the variable *self-efficacy* for use in our regression analysis.

Data was also collected on education and labour market aspirations of these young women. Aspiration measures are single item indicators developed by us, informed by a review of previous surveys with adolescent girls. *Education aspirations* are measured by asking how many years of education these girls would like to complete assuming no

constraints. *Employment aspirations* are measured by asking girls whether they would like to have a paid job (and what kind) five to ten years from the time of the interview.

We also consider hope as a measure of mental health. Hope is measured with a three-item scale developed by the Child Trends Positive Indicator Project (Lippman *et al*., 2014). Respondents were asked the following question: "Please indicate how much these statements describe you: I expect good things to happen to me; I am excited about my future; I trust my future will turn out well." For each of these items, responses were coded as 0 if the answer was "not at all", a little" or "somewhat" and 1 if the answer was "a lot" or "exactly". These responses were then aggregated into a standardized z-score to generate the variable *hope* for use in our regression analysis.

In order to mitigate the known problems of using Likert-style response options with low-literacy and non-Western populations (Church, 2010), the survey included piloted visual aids that increased respondents' comprehension and response times. The multi-item standardized scales all demonstrated satisfactory internal consistency for the Jharkhand survey sample of girls ages 15-24 (Cronbach's $\alpha = 0.89$ for GSES, 0.78 for PHQ-9, and 0.84 for hope).

We also collected data on the social support and networks of these young women. We assess connectedness of these women to local adults and to schools using brief items developed by Blum and Ireland (2004). Drawing on the Nepal Adolescent Girls Employment Initiative trial baseline items (Chakravarty *et al*., 2015), the survey also asks about sources of support for different types of problems. The three main dimensions we focus on in our analysis are lack of social support, knows women in business/employment

and adult connectedness. The first variable is based on the question: "Who, if anyone, would you first go to if you needed help with the following things: needed money; needed health advise; having problem at work or wanted to talk about job possibilities; spouse/boyfriend beat you; another family member beat you; other people in school/work/neighborhood beat you; were teased/bullied; discuss future plans; needed help getting to school/work". For each of these 9 options, we coded the response as equal to 1 if the respondent replies "no one" and 0 if they named someone (e.g. family member/friend/teacher etc.). These responses were then summed over each individual to generate the variable *lack of support*, which could take values 0-9. The second variable is based on the question "How many women do you personally know who have started their own business outside of the home or have a regular paid job working for employers?", with the answer options being "none", "one-three", "four-six" and "more than six". Using these options, we generated a dummy variable *knows women in business* that took the value 0 if the answer was "none" and 1 otherwise. The third variable is based on the question "How much do the following people care about you: adults in community; friends; teachers; local spiritual leaders." For each of the four options, we coded the response as equal to 0 if the respondent replied "very little" and 1 if they said "some" or "a lot". These responses were then summed over each individual to generate the variable *adult connectedness*.

We also collected data on several variables at the household level, including rural/urban location, caste status, religion, gender of head (male/female), primary language, household income, asset ownership (to be used for a wealth index); employment, educational, literacy and numeracy status of all members etc. Data are weighted to account for the differences in probabilities of individual selection across counties and EAs.

Finally, we also collected data on several variables at the area level (village/town community). These include a variable measuring relative poverty status of the area, based on the question: "Compared to the rest of the state, are households in this community: 1-among the richest, 2-a little richer than most communities, 3-about average, 4-a little poorer than most communities, 5-among the poorest." We coded the binary variable *EA (area) poorer than rest* as 1 if the response is either 4 or 5 and zero otherwise. A variable capturing the presence of women in local council (Gram Panchayat) was based on the question: "Does this community's local council have any women representatives?" We coded the binary variable *EA has women in GP* equal to 1 if response is yes and zero otherwise. A variable capturing general attitudes towards women's paid employment was based on the question: "Do most people in this community feel that a married woman should be allowed to work outside her home if she wants to?" We coded the binary variable *EA thinks married women should work* equal to 1 if response is yes and zero otherwise. A variable capturing general attitudes toward girls' education was based on the question: "Do most people in this community feel it is better to send a son to school than it is to send a daughter?" We coded the binary variable *EA thinks son's education is more important* equal to 1 if the answer is yes and zero otherwise. A variable measuring access to primary (secondary) school is based on the question: "Approx. how long does it take to get to nearest primary (secondary) school from (community) centre by most common means of transport: 1=<0.5 hr, 2=0.5-1 hr, 3=1-2 hr, 4=>2 hr?" We coded the binary variable *EA has primary (secondary) school* equal to 1 if the response is 1 and zero otherwise. Finally, a variable measuring presence of violent crime is based on the question: "Are people's day-to-day activities in the community seriously affected by violent crime?" We coded the binary variable *EA has crime* equal to1 if the response is yes and zero otherwise.

The key analyses of this paper utilize data only for the sample of respondents aged 15-24 years, as the validity of some psychosocial instruments used for younger girls is unknown. The relevant sample size is 2,388. We also present some robustness checks for the sub-sample of respondents aged 15-17 year (further details in Section 5).

4. Descriptive Evidence

4.1 Young Women and Household Characteristics

In our sample, mean age of the young women is 18.6 years (see Table 1). 56% of them are not in training, education, or employment (NEET). 34% are married.[iv] On average, these young women aspire to complete higher secondary schooling. 32% of them are in school.[v] 86% of them want to work for pay outside home, but only 11% are currently in paid employment.[vi] Half of them know (at least one) other women running their own businesses, and most feel moderately connected to the adults in their community.

In terms of household characteristics of these young women, most of them have low educated parents and fairly large household size. Almost 90% of them belong to historically vulnerable groups—scheduled castes or scheduled tribes (SC/ST) or other backward classes[vii], while close to 70% are Hindus. 41% of them live in households that own a BPL (Below Poverty Line) card, indicating their low-income status. As a measure of household resources, we use the log of annual household income, and use this to shed light on whether young women from wealthier households have higher aspirations.

Table 1: Descriptive Statistics for Individual and Household Characteristics of Young Women (15-24 years)

	Mean	Std. Dev	Min	Max	Count
Education Aspiration (years)	12.99	(2.84)	1	17	2106
Employment Aspiration (0/1)	0.86	(0.35)	0	1	2388
Hope (z-score)	-0.02	(0.99)	-1	2	2103
Self-efficacy (z-score)	-0.00	(1.00)	-1	2	2388
Attends school (0/1)	0.32	(0.47)	0	1	2388
In paid work (0/1)	0.11	(0.32)	0	1	2387
Age (years)	18.57	(3.00)	15	24	2388
NEET (0/1)	0.56	(0.50)	0	1	2388
Married (0/1)	0.34	(0.48)	0	1	2388
Father's age (years)	46.47	(13.27)	15	100	2388
Mother's age (years)	38.34	(18.30)	0	90	2386
Father's education (years)	4.97	(4.88)	0	17	2388
Mother's education (years)	3.36	(4.52)	0	17	2376
Household size	5.97	(2.35)	1	21	2388
Log annual HH income	10.91	(0.96)	3	16	2193
Caste=SC	0.19	(0.39)	0	1	2381
Caste=ST	0.23	(0.42)	0	1	2381
Caste=OBC	0.47	(0.50)	0	1	2381
Caste=General	0.11	(0.31)	0	1	2381
Religion=Hindu	0.68	(0.47)	0	1	2378
Religion=Muslim	0.20	(0.40)	0	1	2378
Religion=Christian	0.04	(0.18)	0	1	2378
Religion=Sarna	0.09	(0.29)	0	1	2378
Has BPL card	0.41	(0.49)	0	1	2382
Lack of social support (0-9)	1.11	(1.50)	0	9	2388
Knows women in business (0/1)	0.51	(0.50)	0	1	2380
Adult connectedness (0-4)	2.57	(1.06)	0	4	2384
Urban	0.30	(0.46)	0	1	2388
Observations	2388				

To assess how representative our sample is, we compare our sample means with data from Census of India 2011 for Jharkhand and India (Table 1a, Panel A). With regard to proportion of population belonging to historically vulnerable groups, our estimates for Jharkhand are broadly similar to that obtained from Census. However, this proportion is significantly higher compared to the national average of 70%, indicating that our sample, and more generally Jharkhand, has a larger share of historically disadvantaged groups, primarily Scheduled Tribes and hence is more vulnerable that rest of India. Given that membership of these disadvantaged groups is strongly correlated with multidimensional vulnerability, including lower access to opportunities and investments, this makes Jharkhand an important context to study in order to understand which factors hold the key

to breaking the cycle of disadvantage such that outcomes for young women maybe improved in future.

Our sample is also fairly representative in terms of religious composition, except for Muslims. The share of urban households is slightly higher in our sample compared to official estimates for Jharkhand. 18% of young women are engaged in paid work in our sample compared to the official female labour participation rate of 27%.

We also compare our means for young women's educational and employment participation and marital status by age to another representative survey, viz. the National Health and Family Survey 2005 (Table 1a, Panel B). Our estimates are broadly similar to that of NFHS, with the exception of proportion of young women married in 15-19 years (less likely in our sample), and BPL card ownership (more likely in our sample).

Table 1a. Comparison of our sample means with Census 2011, for Jharkhand and India

	(1)	(2)	(3)
Panel A:	Jharkhand		India
	Our survey	Census 2011	Census 2011
Caste=SC	0.19	0.12	0.17
Caste=ST	0.23	0.26	0.09
Caste=OBC	0.47	0.47	0.44
Caste=General	0.11	0.15	0.30
Religion=Hindu	0.68	0.68	0.79
Religion=Muslim	0.20	0.15	0.14
Religion=Christian	0.04	0.04	0.02
Urban	0.30	0.24	0.31
% youth population (15-24 years)	-	0.18	0.19
In paid work (0/1)[1]	0.18	0.27[2]	0.33[2]
Panel B:	Jharkhand		India
	Our survey	NFHS 2005-6	NFHS 2005-6
Married (0/1): 11-14	0.002	0.02	0.007
Married (0/1): 15-19	0.10	0.37	0.19
Married (0/1): 20-24	0.75	0.76	0.64
Attends school (0/1): 11-13	0.76	0.75	0.83
Attends school (0/1): 14-17	0.56	0.55	0.62
Household size	5.97	5.60	4.90
Has BPL card	0.41	0.29	0.22

Notes: [1] This variable is calculated for 18-24 years old in our sample.
[2] This data is obtained from NSS 2011-12 and measures female labour force participation rate, ages 15-59.

5. Empirical Methodology

In order to document the association between non-cognitive skills and young women's aspirations and outcomes, we first estimate the following OLS regression specification:

$$Y_{iha} = \beta_i S_{ia} + \beta'_i M_{ia} + \gamma_i X_{ia} + \gamma_h X_{ha} + \gamma_a X_a + u_{iha} \quad (1)$$

where, Y_{iha} denotes aspirations/outcome of young woman i living in household h in (enumeration) area a. S_{ia} captures our key measure of non-cognitive skills, self-efficacy, while M_{ia} captures the mental health variables, depression and hope. X_{ia} and X_{ha} denote respectively other relevant individual level and household level characteristics, e.g. age, marital status, parental age and education, household size, income status, caste, religion and adult connectedness. X_a captures relevant area level (i.e. village/town) characteristics like relative poverty status, various measures of gender attitudes towards women, presence of schools, crime etc. We cluster standard errors at the area (EA) level. Later, we also control for area fixed effects, which would absorb any area-wide omitted factors that may be correlated with the outcome variables.

The first set of outcome variables we focus on are education and employment aspirations of 15-24 year old young women. Education aspiration is measured as the number of years a young woman would like to study, while the employment aspiration is measured using a binary variable that takes the value 1 if she is interested in being engaged in paid work outside home in the near future, and zero otherwise.

The second set of outcome variables we focus on are educational achievement and labour market outcomes of these women. We use current school attendance as a measure of educational achievement, and whether or not working in paid employment over the

previous year as a measure of labour market outcome.

Finally, we analyse the various correlates of self-efficacy among young women. In other words, we focus on understanding the individual, household, and community level determinants of such non-cognitive skills, thereby providing insight into the strategies or interventions that could be designed to effectively target these in order to improve female education and labor market outcomes.

6. Key Findings

6.1 Self-efficacy and Aspirations

6.1.1 Education Aspirations

The results for education aspirations of the young women are reported in Table 2. A hopeful or optimistic outlook towards future appears to be a key (individual level) predictor (Column 1). A one standard deviation increase in the hope score is associated with a 0.25 increase in the number of years an average young woman would like to study. However, Column 2 shows that the impact of hope primarily works through higher self-efficacy scores, because once self-efficacy is included, hope has no independent significant effect. A one standard deviation increase in the self-efficacy score is associated with a 0.73 increase in number of years an adolescent girl desires to study. This is also robust to controlling for various household and area level characteristics (Columns 3 and 4 respectively), as well as to the inclusion of area fixed effects (Column 5). While these OLS estimates cannot be interpreted as causal, they suggest that having higher self-efficacy is correlated with higher aspirations to improve their educational future. Consistent with expectations, older girls report higher education aspirations, while not being in training,

education, or employment (NEET) and being married are significantly negatively correlated with education aspirations.

With regards to household level predictors of education aspirations among these young women, parental education and household income appear to be important, although the latter is not robust to the inclusion of area fixed effects (magnitude of coefficient is halved and it is no longer statistically significant). This indicates that the association between household income and young women's education aspirations appear to be driven by variation between areas (village or town). Young women from richer areas appear to have higher education aspirations, but within a particular area, household income does not affect such aspirations. Such a finding is consistent with area-specific characteristics that may engender education aspirations (e.g. quality of education in local school etc.). The other important factor appears to be whether or not these young women know any other women that own a business, which is robust to inclusion of area fixed effects. This may be interpreted as a form of "role model" effect and is consistent with the findings of Bernard et al (2014).

Table 2: Self-efficacy and Education Aspirations of Young Women

	(1)	(2)	(3)	(4)	(5)
	Education Aspiration				
Hope (z-score)	0.25***	0.04	-0.01	0.01	0.02
	(0.07)	(0.07)	(0.07)	(0.09)	(0.07)
Self-efficacy (z-score)		0.73***	0.53***	0.48***	0.49***
		(0.07)	(0.08)	(0.09)	(0.08)
Age (years)	0.16***	0.11***	0.05*	0.07*	0.02
	(0.03)	(0.03)	(0.03)	(0.04)	(0.03)
NEET (0/1)	-1.93***	-1.76***	-1.26***	-1.37***	-1.15***
	(0.15)	(0.15)	(0.16)	(0.21)	(0.15)
Married (0/1)	-1.36***	-1.24***	-1.15***	-0.96***	-0.89***
	(0.19)	(0.18)	(0.20)	(0.24)	(0.23)
Father's age (years)			-0.00	0.00	-0.00
			(0.01)	(0.01)	(0.01)
Mother's age (years)			0.02***	0.02**	0.03***
			(0.01)	(0.01)	(0.01)
Father's education (years)			0.05***	0.04**	0.04**
			(0.02)	(0.02)	(0.02)
Mother's education (years)			0.13***	0.10***	0.13***
			(0.02)	(0.02)	(0.02)
Household size			-0.02	-0.04	-0.01

			(0.03)	(0.04)	(0.03)
Log annual HH income			0.24***	0.21**	0.10
			(0.07)	(0.09)	(0.08)
Caste=SC			-0.19	0.03	-0.47*
			(0.24)	(0.28)	(0.28)
Caste=ST			-0.47*	-0.27	-0.69**
			(0.25)	(0.30)	(0.30)
Caste=OBC			0.11	0.31	-0.11
			(0.21)	(0.23)	(0.23)
Religion=Muslim			-0.18	0.19	-0.26
			(0.19)	(0.23)	(0.27)
Religion=Christian			-0.17	-0.94***	-0.21
			(0.30)	(0.25)	(0.38)
Religion=Sarna			-0.23	-0.18	-0.34
			(0.24)	(0.36)	(0.28)
Has BPL card			-0.03	0.05	-0.03
			(0.13)	(0.15)	(0.13)
Lack of social support (0-9)			0.10**	0.06	0.03
			(0.04)	(0.05)	(0.04)
Knows women in business (0/1)			0.68***	0.34**	0.47***
			(0.13)	(0.17)	(0.13)
Adult connectedness (0-4)			0.02	0.11	0.07
			(0.06)	(0.09)	(0.07)
EA poorer than rest				-0.29	
				(0.23)	
EA has women in GP				0.07	
				(0.20)	
EA thinks married women should work				0.41**	
				(0.20)	
EA thinks son's education more imp				-0.18	
				(0.28)	
EA has primary school				0.12	
				(0.46)	
EA has high school				-0.04	
				(0.22)	
EA has crime				0.34	
				(0.38)	
Urban				0.40*	
				(0.21)	
EA fixed effects	No	No	No	No	Yes
Adj. R-sq	0.17	0.23	0.32	0.30	0.37
N	1843	1843	1668	976	1668

Notes: The sample consists of adolescent girls and young women who were 15-24 years old inclusive. Standard errors, in parentheses, are clustered at the EA level. EA refers to enumeration area. * significant at 10 percent, ** significant at 5 percent, *** significant at 1 percent. The dependent variable is number of years of education a girl reports to aspiring to if she faced no constraints. The omitted caste group is General Caste and the omitted religious group is Hindu. The hope variable is a standardized z-score constructed from answers given to the following three questions on: 'expect good things to happen to me'; 'excited about future'; 'trust future will turn out well'. The self-efficacy variable is a standardized z-score constructed from answers given to the following ten questions on: 'can solve difficult problems if try hard enough'; 'can get what I want'; 'can stick to and reach goals'; 'can deal with unexpected events'; 'can handle unexpected situations due to my talent/skills'; 'can solve most problems if try hard enough'; 'can stay calm in difficulty'; 'can find several ways to solve a problem'; 'can think of a solution when in trouble'; 'can handle whatever comes my way'.

One might worry that studying education aspirations of young women in their 20s is not very meaningful since they are long past the age of schooling. To address this concern, we present results for the sub-sample of 15-17 year olds (who are still within the school-going age range) in Appendix A, Tables A1 and A2. The results are qualitatively similar to

those using the full sample.

Since there was over-sampling of urban areas, we also conduct a robustness check of our findings by providing separate estimates for the rural and urban samples. This is presented in Table 3. Column 1 replicates the full-sample results from Column 6 in Table 2 (for ease of reference), while Columns 2 and 3 present the results for the rural and urban sample respectively. The results are similar qualitatively. However, the association between self-efficacy and education aspiration appears to be stronger in rural areas relative to urban areas. We can reject the equality of the coefficient for self-efficacy between Column 2 and 3 at 5% significance (p-value=0.03).

Table 3: Self-efficacy and Education Aspirations of Young Women: Rural-Urban

	(1)	(2)	(3)
	Education Aspirations		
	All	Rural	Urban
Hope (z-score)	0.02	0.07	-0.05
	(0.07)	(0.09)	(0.11)
Self-efficacy (z-score)	0.49***	0.59***	0.29**
	(0.08)	(0.10)	(0.12)
Age (years)	0.02	0.00	0.07
	(0.03)	(0.04)	(0.04)
NEET (0/1)	-1.15***	-1.30***	-0.66**
	(0.15)	(0.17)	(0.32)
Married (0/1)	-0.89***	-0.75***	-1.26**
	(0.23)	(0.27)	(0.48)
Father's age (years)	-0.00	-0.00	-0.01
	(0.01)	(0.01)	(0.01)
Mother's age (years)	0.03***	0.03***	0.02**
	(0.01)	(0.01)	(0.01)
Father's education (years)	0.04**	0.04**	0.03
	(0.02)	(0.02)	(0.03)
Mother's education (years)	0.13***	0.14***	0.12***
	(0.02)	(0.02)	(0.03)
Household size	-0.01	-0.04	0.07
	(0.03)	(0.03)	(0.05)
Log annual HH income	0.10	0.12	0.08
	(0.08)	(0.10)	(0.12)
Caste=SC	-0.47*	-0.75**	-0.17
	(0.28)	(0.38)	(0.41)
Caste=ST	-0.69**	-0.82*	-0.73*
	(0.30)	(0.42)	(0.42)
Caste=OBC	-0.11	-0.27	-0.04
	(0.23)	(0.34)	(0.30)
Religion=Muslim	-0.26	-0.32	-0.20
	(0.27)	(0.35)	(0.38)
Religion=Christian	-0.21	-0.14	-0.10
	(0.38)	(0.44)	(0.74)
Religion=Sarna	-0.34	-0.53*	0.40

	(0.28)	(0.32)	(0.46)
Has BPL card	-0.03	-0.07	0.13
	(0.13)	(0.15)	(0.28)
Lack of social support (0-9)	0.03	0.07	-0.04
	(0.04)	(0.05)	(0.09)
Knows women in business (0/1)	0.47***	0.38**	0.81***
	(0.13)	(0.15)	(0.26)
Adult connectedness (0-4)	0.07	0.04	0.14
	(0.07)	(0.09)	(0.11)
Area fixed effects	Yes	Yes	Yes
Adj. R-sq	0.37	0.36	0.28
N	1668	1168	500

Notes: The sample consists of young women who were 15-24 years old inclusive. Standard errors, in parentheses, are clustered at the area level. Area refers to enumeration area (EA). * significant at 10 percent, ** significant at 5 percent, *** significant at 1 percent. The dependent variable is number of years of education a girl reports to aspiring to if she faced no constraints. The omitted caste group is General Caste and the omitted religious group is Hindu. The hope variable is a standardized z-score constructed from answers given to the following three questions on: 'expect good things to happen to me'; 'excited about future'; 'trust future will turn out well'. The self-efficacy variable is a standardized z-score constructed from answers given to the following ten questions on: 'can solve difficult problems if try hard enough'; 'can get what I want'; 'can stick to and reach goals'; 'can deal with unexpected events'; 'can handle unexpected situations due to my talent/skills'; 'can solve most problems if try hard enough'; 'can stay calm in difficulty'; 'can find several ways to solve a problem'; 'can think of a solution when in trouble'; 'can handle whatever comes my way'

6.1.2 Employment Aspirations

The results for employment aspirations of these young women are reported in Table 4. Here, too, hope is a key predictor of employment aspirations (Column 1). Inclusion of the self-efficacy measure erodes the hope effect (as in the case of education aspiration) (Column 2). Everything else constant, a one standard deviation increase in the self-efficacy score is associated with a 7 pp. increase in the likelihood of aspiring to paid work in future. Adding household-level controls, area-level controls and area fixed effects do not substantially change the coefficient on self-efficacy (Column 3, 4 and 5 respectively). As in case of education aspirations, knowing successful businesswomen also has an independent effect in raising employment aspirations of young women. NEET status is significantly negatively correlated with employment aspiration but age or marital status matters makes no difference.

Table 4: Self-efficacy and Employment Aspirations of Young Women

	(1)	(2)	(3)	(4)	(5)
	Employment Aspiration				
Hope (z-score)	0.02***	0.00	0.01	-0.00	0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Self-efficacy (z-score)		0.07***	0.05***	0.05***	0.05***
		(0.01)	(0.01)	(0.01)	(0.01)
Age (years)	0.00	-0.00	-0.00	0.00	-0.00

	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
NEET (0/1)	-0.12***	-0.11***	-0.09***	-0.08***	-0.08***
	(0.02)	(0.02)	(0.02)	(0.03)	(0.02)
Married (0/1)	-0.02	-0.01	-0.03	-0.06*	-0.04
	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)
Father's age (years)			-0.00	-0.00	-0.00
			(0.00)	(0.00)	(0.00)
Mother's age (years)			0.00	0.00	0.00
			(0.00)	(0.00)	(0.00)
Father's education (years)			-0.00	-0.00	-0.00
			(0.00)	(0.00)	(0.00)
Mother's education (years)			0.01***	0.00	0.01***
			(0.00)	(0.00)	(0.00)
Household size			0.00	-0.00	0.00
			(0.00)	(0.01)	(0.00)
Log annual HH income			-0.00	-0.00	-0.00
			(0.01)	(0.01)	(0.01)
Caste=SC			0.04	0.03	-0.01
			(0.03)	(0.04)	(0.04)
Caste=ST			0.02	0.02	0.01
			(0.04)	(0.04)	(0.04)
Caste=OBC			0.03	0.00	-0.02
			(0.02)	(0.03)	(0.02)
Religion=Muslim			-0.01	0.01	-0.04
			(0.02)	(0.03)	(0.04)
Religion=Christian			0.02	-0.01	-0.01
			(0.05)	(0.05)	(0.08)
Religion=Sarna			-0.04	-0.03	-0.01
			(0.04)	(0.06)	(0.04)
Has BPL card			0.00	-0.01	0.00
			(0.02)	(0.02)	(0.02)
Lack of social support (0-9)			-0.00	0.01	-0.01
			(0.01)	(0.01)	(0.01)
Knows women in business (0/1)			0.08***	0.09***	0.05***
			(0.02)	(0.02)	(0.02)
Adult connectedness (0-4)			-0.02**	-0.01	-0.01
			(0.01)	(0.01)	(0.01)
EA poorer than rest				-0.01	
				(0.02)	
EA has women in GP				0.01	
				(0.02)	
EA thinks married women should work				0.03	
				(0.02)	
EA thinks son's education more imp				0.03	
				(0.03)	
EA has primary school				-0.04	
				(0.03)	
EA has high school				0.03	
				(0.02)	
EA has crime				0.02	
				(0.02)	
Urban				-0.05*	
				(0.03)	
EA fixed effects	No	No	No	No	Yes
Adj. R-sq	0.03	0.06	0.07	0.07	0.08
N	2103	2103	1896	1092	1896

Notes: The sample consists of adolescent girls and young women who were 15-24 years old inclusive. Standard errors, in parentheses, are clustered at the area level. Area refers to enumeration area (EA). * significant at 10 percent, ** significant at 5 percent, *** significant at 1 percent. The dependent variable is a binary variable indicating whether or not a girl aspires to be employed in a job in 5-10 years' time. The omitted caste group is General Caste and the omitted religious group is Hindu. The hope variable is a standardized z-score constructed from answers given to the following

three questions on: 'expect good things to happen to me'; 'excited about future'; 'trust future will turn out well'. The self-efficacy variable is a standardized z-score constructed from answers given to the following ten questions on: 'can solve difficult problems if try hard enough'; 'can get what I want'; 'can stick to and reach goals'; 'can deal with unexpected events'; 'can handle unexpected situations due to my talent/skills'; 'can solve most problems if try hard enough'; 'can stay calm in difficulty'; 'can find several ways to solve a problem'; 'can think of a solution when in trouble'; 'can handle whatever comes my way'.

Here, too, we conduct a robustness check of our findings by providing separate estimates for the rural and urban samples in Table 5. Column 1 replicates the full-sample results from Table 4, Column 5 (for ease of reference), while Columns 2 and 3 present the results for the rural and urban samples respectively. The relationship between self-efficacy and employment aspiration is qualitatively similar for both samples, although somewhat weaker for the urban sample. The role model effect, on the other hand, appears to be driven by the urban sample.

Table 5: Self-efficacy and Employment Aspirations of Young Women: Rural-Urban

	(1)	(2)	(3)
	Employment Aspiration		
	All	Rural	Urban
Hope (z-score)	0.01	0.01	0.02
	(0.01)	(0.01)	(0.01)
Self-efficacy (z-score)	0.05***	0.06***	0.03*
	(0.01)	(0.01)	(0.02)
Age (years)	-0.00	-0.00	0.00
	(0.00)	(0.00)	(0.01)
NEET (0/1)	-0.08***	-0.09***	-0.05
	(0.02)	(0.03)	(0.04)
Married (0/1)	-0.04	-0.04	-0.05
	(0.03)	(0.03)	(0.07)
Father's age (years)	-0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.00)
Mother's age (years)	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)
Father's education (years)	-0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.00)
Mother's education (years)	0.01***	0.01***	0.00
	(0.00)	(0.00)	(0.00)
Household size	0.00	-0.00	0.01*
	(0.00)	(0.01)	(0.01)
Log annual HH income	-0.00	0.00	-0.01
	(0.01)	(0.01)	(0.02)
Caste=SC	-0.01	0.00	-0.00
	(0.04)	(0.05)	(0.05)
Caste=ST	0.01	0.02	0.01
	(0.04)	(0.06)	(0.05)
Caste=OBC	-0.02	-0.00	-0.02
	(0.02)	(0.04)	(0.04)
Religion=Muslim	-0.04	-0.04	-0.03
	(0.04)	(0.05)	(0.05)
Religion=Christian	-0.01	0.03	-0.08
	(0.08)	(0.10)	(0.11)

Religion=Sarna	-0.01	-0.00	-0.03
	(0.04)	(0.04)	(0.14)
Has BPL card	0.00	-0.00	0.04
	(0.02)	(0.02)	(0.04)
Lack of social support (0-9)	-0.01	-0.00	-0.01
	(0.01)	(0.01)	(0.02)
Knows women in business (0/1)	0.05***	0.04	0.10***
	(0.02)	(0.02)	(0.04)
Adult connectedness (0-4)	-0.01	-0.02	-0.00
	(0.01)	(0.01)	(0.02)
EA fixed effects	Yes	Yes	Yes
Adj. R-sq	0.08	0.08	0.07
N	1896	1361	535

Notes: The sample consists of adolescent girls and young women who were 15-24 years old inclusive. Standard errors, in parentheses, are clustered at the area level. Area refers to enumeration area (EA). * significant at 10 percent, ** significant at 5 percent, *** significant at 1 percent. The dependent variable is a binary variable indicating whether or not a girl aspires to be employed in a job in 5-10 years' time. The omitted caste group is General Caste and the omitted religious group is Hindu. The hope variable is a standardized z-score constructed from answers given to the following three questions on: 'expect good things to happen to me'; 'excited about future'; 'trust future will turn out well'. The self-efficacy variable is a standardized z-score constructed from answers given to the following ten questions on: 'can solve difficult problems if try hard enough'; 'can get what I want'; 'can stick to and reach goals'; 'can deal with unexpected events'; 'can handle unexpected situations due to my talent/skills'; 'can solve most problems if try hard enough'; 'can stay calm in difficulty'; 'can find several ways to solve a problem'; 'can think of a solution when in trouble'; 'can handle whatever comes my way'.

So far, we have found using OLS that a positive association exists between non-cognitive skills like self-efficacy and youth aspirations in Jharkhand. However, it is challenging to interpret these estimates as causal, owing to potential endogeneity concerns like reverse causality and omitted variable problem. In other words, while self-efficacy may increase aspirations, higher aspirations may also contribute to improved self-efficacy. Alternatively, both may be driven by unobserved individual heterogeneity. In an attempt to estimate the causal impact of non-cognitive skills on aspirations, we use an instrumental variable (IV) strategy that utilizes exposure to shocks as an instrument for self-efficacy, and find similar results. The IV estimation strategy and results are discussed in Appendix B.

6.2 Self-efficacy, Aspirations and Actual Achievements

Next, we examine the role of non-cognitive skills of the young women in relationship to their actual education and employment outcomes. We focus specifically on school attendance as a measure of educational achievement, and working in paid employment over the previous year as a measure of labour market outcome.

6.2.1 Educational Outcome: Attending School

The results for the role of self-efficacy on school attendance are presented in Table 6. We find that self-efficacy is positively correlated with attending school (Column 1). A one standard deviation increase in self-efficacy is associated with a 5 pp. increase in the likelihood of attending school. However, the effect of self-efficacy is muted once education aspiration is introduced into the model. In Column 2, the coefficient for self-efficacy drops to 0.02 and is no longer significant at conventional levels. In contrast, the coefficient for education aspiration is now positive and highly significant. This continues to hold even after household-level and area-level controls are included (Columns 3 and 4), as well as after area fixed effects are added (Column 5). Taken together, these results provide evidence in favour of the hypothesis that the importance of self-efficacy for real educational outcomes is largely mediated through increased aspirations. Knowing successful businesswomen and feeling connected to the broader social network also have an independent positive impact on likelihood of attending school.

Table 6: Self-efficacy, Education Aspirations and School Attendance of Young Women

	(1)	(2)	(3)	(4)	(5)
	Attends school				
Hope (z-score)	0.02	0.02	0.01	-0.00	0.02*
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Self-efficacy (z-score)	0.05***	0.02	-0.01	0.01	-0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Education Aspiration		0.04***	0.03***	0.03***	0.03***
		(0.00)	(0.00)	(0.01)	(0.00)
Age (years)	-0.04***	-0.04***	-0.04***	-0.04***	-0.04***
	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)
Married (0/1)	-0.25***	-0.20***	-0.16***	-0.16***	-0.16***
	(0.02)	(0.02)	(0.03)	(0.04)	(0.03)
Father's age (years)			0.00	0.00	0.00
			(0.00)	(0.00)	(0.00)
Mother's age (years)			-0.00	-0.00	-0.00
			(0.00)	(0.00)	(0.00)
Father's education (years)			0.01**	0.00	0.00
			(0.00)	(0.00)	(0.00)
Mother's education (years)			0.00	0.00	0.00
			(0.00)	(0.00)	(0.00)
Household size			0.01	0.01	0.01
			(0.01)	(0.01)	(0.01)
Log annual HH income			-0.00	-0.02	-0.03*
			(0.01)	(0.02)	(0.01)

Caste=SC			0.01	0.02	0.04
			(0.05)	(0.06)	(0.06)
Caste=ST			0.02	-0.01	0.06
			(0.05)	(0.07)	(0.06)
Caste=OBC			0.06	0.06	0.08*
			(0.04)	(0.05)	(0.04)
Religion=Muslim			-0.05	-0.06*	-0.06
			(0.03)	(0.03)	(0.05)
Religion=Christian			0.03	-0.04	-0.00
			(0.07)	(0.13)	(0.09)
Religion=Sarna			-0.00	0.05	-0.04
			(0.06)	(0.07)	(0.06)
Has BPL card			-0.00	-0.01	0.00
			(0.02)	(0.03)	(0.02)
Lack of social support (0-9)			-0.01	-0.01	-0.02**
			(0.01)	(0.01)	(0.01)
Knows women in business (0/1)			0.04**	0.05*	0.03
			(0.02)	(0.03)	(0.02)
Adult connectedness (0-4)			0.10***	0.09***	0.10***
			(0.01)	(0.02)	(0.01)
EA poorer than rest				0.07**	
				(0.03)	
EA has women in GP				0.01	
				(0.04)	
EA thinks married women should work				0.05	
				(0.03)	
EA thinks son's education more imp				-0.03	
				(0.04)	
EA has primary school				-0.04	
				(0.06)	
EA has high school				0.03	
				(0.03)	
EA has crime				0.02	
				(0.07)	
Urban				0.05	
				(0.03)	
EA fixed effects	No	No	No	No	Yes
Adj. R-sq	0.23	0.27	0.32	0.31	0.36
N	2103	1843	1668	976	1668

Notes: The sample consists of adolescent girls and young women who were 15-24 years old inclusive. Standard errors, in parentheses, are clustered at the EA level. EA refers to enumeration area. * significant at 10 percent, ** significant at 5 percent, *** significant at 1 percent. The dependent variable is a binary variable that take the value 1 if the individual reports attending school and 0 otherwise. The omitted caste group is General Caste and the omitted religious group is Hindu. The hope variable is a standardized z-score constructed from answers given to the following three questions on: 'expect good things to happen to me'; 'excited about future'; 'trust future will turn out well'. The self-efficacy variable is a standardized z-score constructed from answers given to the following ten questions on: 'can solve difficult problems if try hard enough'; 'can get what I want'; 'can stick to and reach goals'; 'can deal with unexpected events'; 'can handle unexpected situations due to my talent/skills'; 'can solve most problems if try hard enough'; 'can stay calm in difficulty'; 'can find several ways to solve a problem'; 'can think of a solution when in trouble'; 'can handle whatever comes my way'.

These results are robust to restricting the sample to 15-17 year old young women only (see Appendix A, Table A3).

6.2.2 Employment Outcome: In paid work

The results for the role of self-efficacy on labour market outcome are presented in Table 7. Interestingly, self-efficacy appears to be negatively correlated with the likelihood being engaged in paid work (Column 1). A possible explanation for such a result could be that, since Jharkhand has very limited job opportunities for young women, and women face many other constraints to employment, those women who have high self-efficacy are unable to find gainful employment of their choice and hence are less likely to participate in the labour market. Indeed, our analyses reported elsewhere find that, among the small share of young women participating in the labor market in Jharkhand, most are engaged in limited informal self-employment—generally in or near the home—despite common preferences for other types of occupations and wage employment (Bhattacharya and Morton, 2016). This is in contrast to the findings of Table 4 where the association between self-efficacy and employment *aspirations* is positive because young women, in that case, are considering jobs that they would like to pursue.

Column 2 indicates that even after controlling for employment aspirations, the negative association between self-efficacy and labour market participation persists. However, once household-level and area-level controls are included in Columns 3-4, the coefficient for self-efficacy is no longer statistically significant (although still negative in magnitude). This holds with inclusion of area fixed effects too (Column 5). Young women from poorer households are consistently more likely to be engaged in paid work. This is consistent with the findings of Goldin (1995) that, when income is low, women' participation in the labour force is high, owing to the necessity of working to provide for consumption of goods and services.[viii] Hence, conditional on household poverty status, self-efficacy is no longer significantly associated with labour market participation, but employment aspirations still are. Taken together, these results reiterate that (a) self-efficacy appears to be important for

labor market outcomes via aspirations, but, at the same time, (b) self-efficacy on its own may be insufficient, especially in highly constrained social contexts like Jharkhand, to ensure that young women are able to pursue the economic opportunities to which they aspire. It is to be noted that the estimated effects of self-efficacy and aspirations (conditional on self-efficacy) on employment attainment are small, which may indicate the presence of other explanatory factors. Nonetheless, our findings highlight the significance of these factors in explaining employment outcomes over and above the influence of socio-economic adversity and area deprivation. Knowing successful businesswomen appears to have an independent positive impact on likelihood of attending school, although not consistently significant across all specifications.

Table 7: Self-efficacy, Employment Aspirations and Employment Status of Young Women

	(1)	(2)	(3)	(4)	(5)
	In paid work				
Hope (z-score)	0.00	-0.00	0.00	0.01	0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Self-efficacy (z-score)	-0.02***	-0.03***	-0.01	-0.01	-0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Employment Aspiration		0.04*	0.05**	0.00	0.07***
		(0.02)	(0.02)	(0.03)	(0.02)
Age (years)	0.02***	0.02***	0.02***	0.02***	0.01***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Married (0/1)	-0.08***	-0.08***	-0.09***	-0.12***	-0.08***
	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)
Father's age (years)			-0.00	-0.00	-0.00
			(0.00)	(0.00)	(0.00)
Mother's age (years)			-0.00	-0.00	-0.00
			(0.00)	(0.00)	(0.00)
Father's education (years)			-0.00***	-0.01***	-0.00*
			(0.00)	(0.00)	(0.00)
Mother's education (years)			-0.00*	-0.01**	-0.00*
			(0.00)	(0.00)	(0.00)
Household size			-0.01**	-0.01*	-0.01**
			(0.00)	(0.00)	(0.00)
Log annual HH income			-0.00	-0.00	0.00
			(0.01)	(0.01)	(0.01)
Caste=SC			-0.02	0.01	0.01
			(0.04)	(0.05)	(0.04)
Caste=ST			-0.01	-0.00	-0.00
			(0.04)	(0.05)	(0.04)
Caste=OBC			-0.06**	-0.05	-0.02
			(0.03)	(0.03)	(0.03)
Religion=Muslim			-0.02	-0.04**	-0.05*
			(0.03)	(0.02)	(0.03)
Religion=Christian			-0.00	0.06	-0.02
			(0.06)	(0.07)	(0.07)
Religion=Sarna			0.06	0.11	0.05

			(0.05)	(0.07)	(0.05)
Has BPL card			0.05***	0.03*	0.06***
			(0.02)	(0.02)	(0.02)
Lack of social support (0-9)			0.02**	0.01	0.02**
			(0.01)	(0.01)	(0.01)
Knows women in business (0/1)			0.01	0.02	0.03*
			(0.01)	(0.02)	(0.02)
Adult connectedness (0-4)			-0.01	-0.01	-0.01
			(0.01)	(0.01)	(0.01)
EA poorer than rest				-0.04*	
				(0.02)	
EA has women in GP				-0.04	
				(0.03)	
EA thinks married women should work				-0.01	
				(0.02)	
EA thinks son's education more imp				-0.04	
				(0.03)	
EA has primary school				0.02	
				(0.03)	
EA has high school				0.01	
				(0.03)	
EA has crime				-0.01	
				(0.04)	
Urban				0.02	
				(0.03)	
EA fixed effects	No	No	No	No	Yes
Adj. R-sq	0.01	0.01	0.04	0.06	0.10
N	2102	2102	1895	1091	1895

Notes: The sample consists of adolescent girls and young women who were 15-24 years old inclusive. Standard errors, in parentheses, are clustered at the area level. Area refers to enumeration area (EA). * significant at 10 percent, ** significant at 5 percent, *** significant at 1 percent. The dependent variable is a binary variable that takes the value 1 if the individual reports being engaged in paid work/income generating activity over the last 12 months and 0 otherwise. The omitted caste group is General Caste and the omitted religious group is Hindu. The hope variable is a standardized z-score constructed from answers given to the following three questions on: 'expect good things to happen to me'; 'excited about future'; 'trust future will turn out well'. The self-efficacy variable is a standardized z-score constructed from answers given to the following ten questions on: 'can solve difficult problems if try hard enough'; 'can get what I want'; 'can stick to and reach goals'; 'can deal with unexpected events'; 'can handle unexpected situations due to my talent/skills'; 'can solve most problems if try hard enough'; 'can stay calm in difficulty'; 'can find several ways to solve a problem'; 'can think of a solution when in trouble'; 'can handle whatever comes my way'.

6.3 Key Correlates of Self-Efficacy

Given that non-cognitive skills like self-efficacy appear to be one of the key predictors of young women's aspirations, we next explore key correlates of self-efficacy in our data. We begin by analyzing the area-level correlates of adolescent self-efficacy (Table 8, Column 1). Presence of a high school near the EA and the relative poverty status of the EA appear to be key correlates, but are no longer significant when we add household level correlates (Column 2, 3). Parental education appears to be the key household-level correlate, whose effect was probably being picked up in Column 1 by the area poverty status. Finally, we add individual level correlates (Column 4, 5) and find that age, NEET status, previous

participation in training programs, social support, knowing successful women in business/employment and adult connectedness have independent explanatory power for self-efficacy. Marital status does not make any difference.

Table 8: Correlates of Self-Efficacy among Young Women

	(1)	(2)	(3)	(4)	(5)
	Self-efficacy				
	Area characteristics	Area and HH characteristics		Area, HH and individual characteristics	
Area poorer than rest	-0.21**	-0.06	-0.05	-0.05	-0.06
	(0.08)	(0.07)	(0.07)	(0.06)	(0.06)
Area has women in GP	-0.03	0.01	0.02	0.03	0.01
	(0.09)	(0.07)	(0.06)	(0.06)	(0.06)
Area has primary school	0.01	-0.00	-0.02	-0.01	0.00
	(0.12)	(0.09)	(0.08)	(0.08)	(0.08)
Area has high school	0.22**	0.13	0.15*	0.13	0.12
	(0.10)	(0.09)	(0.08)	(0.08)	(0.08)
Area has crime	-0.03	-0.07	-0.06	-0.07	-0.06
	(0.12)	(0.09)	(0.09)	(0.08)	(0.07)
Area thinks married women should work	-0.01	-0.11	-0.10	-0.11*	-0.12*
	(0.08)	(0.07)	(0.07)	(0.06)	(0.06)
Area thinks son's education more imp	-0.09	-0.15*	-0.16*	-0.16*	-0.18**
	(0.11)	(0.09)	(0.08)	(0.08)	(0.07)
Father's age (years)		0.00	0.00	0.00	0.00
		(0.00)	(0.00)	(0.00)	(0.00)
Mother's age (years)		0.01	0.00	0.00	0.00
		(0.00)	(0.00)	(0.00)	(0.00)
Father's education (years)		0.02***	0.02***	0.01**	0.01*
		(0.01)	(0.01)	(0.01)	(0.01)
Mother's education (years)		0.04***	0.04***	0.03***	0.03***
		(0.01)	(0.01)	(0.01)	(0.01)
Household size		-0.00	-0.00	-0.00	0.00
		(0.01)	(0.01)	(0.01)	(0.01)
Log annual HH income		0.08**	0.06	0.05	0.03
		(0.04)	(0.04)	(0.04)	(0.03)
Urban		0.08	0.07	0.03	0.03
		(0.08)	(0.08)	(0.07)	(0.07)
Caste=SC			-0.19	-0.18	-0.14
			(0.14)	(0.13)	(0.13)
Caste=ST			-0.19	-0.18	-0.20
			(0.14)	(0.13)	(0.14)
Caste=OBC			-0.19*	-0.19*	-0.19*
			(0.10)	(0.10)	(0.11)
Religion=Muslim			0.00	0.02	0.05
			(0.11)	(0.11)	(0.11)
Religion=Christian			-0.12	-0.12	-0.08
			(0.17)	(0.16)	(0.16)
Religion=Sarna			-0.22	-0.24*	-0.22*
			(0.13)	(0.13)	(0.12)
Age (years)				0.05***	0.04***
				(0.01)	(0.01)
NEET (0/1)				-0.25***	-0.14**
				(0.06)	(0.06)
Married (0/1)				-0.10	-0.06
				(0.09)	(0.10)
Participated in any training program				0.36***	0.33***

				(0.09)	(0.10)
Lack of social support (0-9)					-0.04*
					(0.02)
Knows women in business (0/1)					0.19***
					(0.06)
Adult connectedness (0-4)					0.10***
					(0.03)
Adj. R-sq	0.02	0.09	0.10	0.12	0.14
N	1383	1277	1266	1266	1263

Notes: The sample consists of young women who were 15-24 years old inclusive. Standard errors, in parentheses, are clustered at the area level. Area refers to enumeration area (EA). * significant at 10 percent, ** significant at 5 percent, *** significant at 1 percent. The self-efficacy variable is a standardized z-score constructed from answers given to the following ten questions on: 'can solve difficult problems if try hard enough'; 'can get what I want'; 'can stick to and reach goals'; 'can deal with unexpected events'; 'can handle unexpected situations due to my talent/skills'; 'can solve most problems if try hard enough'; 'can stay calm in difficulty'; 'can find several ways to solve a problem'; 'can think of a solution when in trouble'; 'can handle whatever comes my way'.

Some of the obvious correlates like mother's paid employment status, decision-making power of the adolescent, whether or not has children, separate earnings etc., do not have enough variation in our data or have far too many missing values to make their inclusion in this analysis meaningful.

Thus, the key finding that appears to be emerging from the above analysis is that self-efficacy appears to be one of the key determinants of aspirations among young women in Jharkhand, both in terms of education and employment. We also find that the importance of self-efficacy for *actual* outcomes of these women in the education and labour markets is largely mediated through increased aspirations. In addition, the existence of a supportive environment (proxied by knowing other successful women and feeling connected to the broader social network) is found to play an important and independent role in facilitating education and employment aspirations and outcomes of these young women.

In terms of key correlates of self-efficacy, individual and household factors like age, previous training experience, and an "enabling" environment i.e. one where girls have family/social support, feel connected and have educated parents and other successful role models to look up to, appear to be important.

Consistent with our results, Darolia and Wydick (2011) find that actions such as parental praise designed to foster an increase in self-esteem result in academic achievement

in university undergraduates above what natural ability would dictate.

6.4 Discussion

Our results have implications for the design and assessment of programs aiming to alter young women's educational and economic trajectories, especially by boosting their aspirations. Non-cognitive skills like self-efficacy appear to be strongly correlated with young women's educational and employment aspirations, even after controlling for various objective individual and household characteristics. Hence these "hidden" forms of human capital could potentially serve as novel but critical targets in programs designed to boost the education and labor market outcomes of women.

Our findings suggest that expectations based on other disciplines (in particular, psychology) and research in other (in particular, richer) countries broadly hold true for young women and girls in a low-income Indian state. Bandura's self-efficacy theory, based on a social-cognitive framework, has had considerable influence in psychology and beyond by framing how individuals' beliefs in their capacity to execute behaviors necessary to achieve specific ends influence the goals for which they strive, the amount of energy they expended to achieve those goals, as well as the likelihood of achieving certain levels of behavioral performance (Bandura, 1977; 1997). As discussed earlier, existing empirical studies have found positive association between self-efficacy and adolescence outcomes. Specifically in the context of education and employment, Bandura *et al*. (2001) show that Italian adolescents' self-efficacy beliefs plays a significant role in shaping their career aspirations, including the types of occupations to which they aspire, and dominated actual academic achievement as a key determinant of career aspirations. A 10-year longitudinal study in the US found that adolescents' level of self-efficacy was related to their continuing goal striving and achievement over time (Messersmith & Schulenberg, 2010), while a

separate longitudinal study found that adolescent self-efficacy beliefs predicted lower likelihood of unemployment and higher likelihood of job satisfaction in young adulthood (Pinquart *et al*., 2003). Our findings highlight that the positive association between self-efficacy and adolescents' education and employment outcomes extends to developing country contexts as well.

Given the wide gender disparities in education and employment in contexts like Jharkhand, we sought to examine the relevance of this theory for improving related outcomes among young women and girls in such settings. At the same time, we pursued this analysis recognizing that young women and girls, particularly in highly patriarchal societies, also face other binding constraints to equal opportunity and achievement in education and employment – such as rigid gender roles, early marriage, limited mobility, and gender-based violence (Morton *et al*., 2014) – that could diminish the relative importance of non-cognitive factors. Yet, our results demonstrate that non-cognitive skills are strongly correlated with young women's educational and employment aspirations and outcomes. Perhaps it is precisely because young women face significant constraints that their confidence and internal resolve to aspire and achieve in education and employment in the face of considerable barriers are particularly important in contexts like Jharkhand. Future research exploring the relative importance of non-cognitive skills between sexes and between different social-economic contexts could help to investigate this possibility.

Importantly, an increasing evidence base points to the potential of interventions to increase youth self-efficacy and mental health in India as well as other countries (Barry *et al*., 2013; Krishnan & Krutikova, 2013; Leventhal *et al*., 2015). In Jharkhand, our analyses show that modifiable factors with strong correlations to self-efficacy include participation in training programs, exposure to successful women, and social supports. This is consistent

with psychological and social theory, which posits that self-efficacy beliefs are modifiable and are generally cultivated through three primary social process: *mastery experience* (actual experience with tasks and achievement, which can be facilitated through training, for example), *vicarious experience* (learning socially from peers or others sharing similar characteristics having relevant attainment, such as exposure to successful women in this case), and *social persuasions* (receiving positive and affirming feedback, which is generated by social supports) (Pajares, 2006).

However, these results also point to the challenges of evaluating any program aimed at altering girls' life aspirations using non-experimental methods. Such interventions are gaining prominence as potential ways to impact actual life achievements (Schoon and Polek, 2011; Schoon and Parsons, 2002). However, as our results indicate, selection will play a key role in who participates in such programs and who is likely to benefit most from them. While some dimensions of skills and ability will surely play a role in participation decisions, certain additional non-measured dimensions are also likely to be at play. It is hoped that the findings of this paper, as well as future work with follow-up surveys, will further our understanding about the magnitude and direction of such selection bias in the process of evaluation of these programs.

Finally, it is important to consider a potential "dark" side of boosting self-efficacy beliefs too much such that they lead to an overestimation of one's abilities and potentially lead to worse outcomes. For example, using longitudinal data in England, Schoon and Lyons-Amos (2017) found that those who had not been in education, employment or training (NEET) long-term had similar levels of reported self-efficacy as those in higher education. In other words, too high levels of self-efficacy may have negative implications for labour market participation owing to an inflated sense of competence. However, it is

worth noting that the young women in our sample might be at relatively low levels of self-efficacy. Indeed, comparison with GSES scores used by Luszczynska *et al*. (2005) from five countries reveals that the raw mean GSES score for our sample of young women from India (29.1) is indeed lower than that for women in developed countries like the US (30.6) as well as men (31.5), suggesting that the concern regarding the "dark" side of self-efficacy may be somewhat less within our context.

7. Conclusion

Evidence is accumulating on the importance of psychologically informed development policies and interventions, as underscored by the *World Development Report 2015* (World Bank, 2014). This paper expands on this evidence base by including non-cognitive variables in a youth survey in Jharkhand, India alongside more conventional aspirations, education, and employment modules to enable more in-depth analysis of the relationships between these factors. We find that individual non-cognitive skills like self-efficacy are strongly correlated with young women's educational and employment aspirations and, in turn, their actual attainments. This suggests that such hidden forms of human capital may constitute critical targets for interventions aimed at altering young women's educational and economic trajectories.

We also identify factors that correlate with level of self-efficacy among these young women. We find that individual and household level factors like age, previous training experience, and an "enabling" environment – i.e., one in which girls enjoy family/social support, feel connected and have educated parents and other successful role models to look up to – appear to be important in boosting their sense of self-efficacy. In addition, the existence of a supportive environment plays an important and independent role in facilitating education and employment aspirations and outcomes of these young women.

We argue that our findings could usefully inform the design of programs aimed to boost female educational and labor market outcomes.

References

Alkire, S. (2002) "Dimensions of Human Development", *World Development*, Vol. 30(2), pp. 181–205

Alkire, S. (2005) "Subjective Quantitative Studies of Human Agency", *Social Indicators Research*, Vol. 74, pp. 217 – 260

Alkire, S. (2009) "Concepts and Measures of Agency", in K. Basu and R. Kanbur (Eds.), *Arguments for a Better World: Essays in Honour of Amartya Sen; Volume 1: Ethics, Welfare and Measurement*. Oxford: Oxford University Press

Alsop, R., M. F. Bertelsen and J. Holland (2006) *Empowerment in Practise: From Analysis to Implementation*, Edited by World Bank

Alsop, R. and N. Heinsohn (2005) "Measuring Empowerment in Practice: Structuring Analysis and Framing Indicators", *World Bank Policy Research Working Paper 123*: World Bank

Angrist, J. and V. Lavy (1999) "Using Maimonides' Rule to Estimate the Effect of Class Size on Scholastic Achievement", *Quarterly Journal of Economics*, Vol. 114(2), pp. 533-575

Baldacci, E., B. Clements, S. Gupta and Q. Cui (2008) "Social Spending, Human Capital, and Growth in Developing Countries", *World Development* Vol. 36(8): pp. 1317-1341

Bandura, A. (1977) "Self-efficacy: Toward a Unifying Theory of Behavioral Change", *Psychological Review,* Vol. 84, pp. 191-215

Bandura, A. (1993) “Perceived Self-efficacy in Cognitive Development and Functioning”, *Educational Psychologist*, Vol. 28(2), pp. 117–148

Bandura, A. (1997) *Self-Efficacy: The Exercise of Control*, New York, NY: W. H. Freeman

Bandura, A., C. Barbaranelli, G. V. Caprara and C. Pastorelli (2001) “Self-efficacy Beliefs as Shapers of Children's Aspirations and Career Trajectories”, *Child Development*, Vol. 72(1), pp. 187-206

Barry, M. M., A. M. Clarke, R. Jenkins and V. Patel (2013) “A Systematic Review of the Effectiveness of Mental Health Promotion Interventions for Young People in Low and Middle Income Countries”, *BMC Public Health*, Vol. 13(835)

Becker, B. E. and S. S. Luthar (2002) “Social-Emotional Factors Affecting Achievement Outcomes Among Disadvantaged Students: Closing the Achievement Gap.” *Educational Psychologist*, Vol. 37(4), pp. 197–214

Bernard, T., S. Dercon, K. Orkin and A. S. Taffesse (2014) “The Future in Mind: Aspirations and Forward-Looking Behavior in Rural Ethiopia”, *CSAE Working Paper WPS/2014-16*, University of Oxford

Blattman, C., J. C. Jamison and M. Sheridan (2017) “Reducing Crime and Violence: Experimental Evidence from Cognitive Behavioral Therapy in Liberia,” *American Economic Review*, Vol. 107 (4), pp. 1165–1206

Blum, R. and M. Ireland (2004) “Reducing Risk, Increasing Protective Factors: Findings from the Caribbean Youth Health Survey”, *Journal of Adolescent Health*, Vol. 35, pp. 493-500

Bradley, D., P. Noonan, H. Nugent and B. Scales (2008) *Review of Australian Higher Education: Final Report*, Department of Education, Employment and Workplace Relations, Canberra

Carroll, A., S. Houghton, R. Wood, K. Unsworth, J. Hattie, L. Gordon and J. Bower (2009) "Self-efficacy and Academic Achievement in Australian High School Students: the Mediating Effects of Academic Aspirations and Delinquency", *Journal of Adolescence*, Vol. 32, pp. 797–817

Chakravarty, S., M. Lundberg, P. Nikolov and J. Zenker (2015) *The Role of Training Programs for Youth Employment in Nepal: Impact Evaluation Report on the Employment Fund*, Washington, DC: World Bank.

Church, A. T. (2010) "Measurement Issues in Cross-cultural Research" in G. Walford, E. Tucker & M. Viswanathan (Eds.), *The Sage Handbook of Measurement* (pp. 152-175). London: SAGE.

Clausen, J. A. (1993) *American Lives: Looking Back at the Children of the Great Depression*, Berkeley, CA: University of California Press

Cunha, F. and J. Heckman (2008) "Formulating, Identifying and Estimating the Technology of Cognitive and Noncognitive Skill Formation", *Journal of Human Resources*, Vol. 43(4), pp. 738-782

Dalton, P. S., S. Ghosal and A. Mani (2014) "Poverty and Aspirations Failure", *Economic Journal*, Vol. 126(590), pp. 165-188

Darolia, R. and Wydick, B. (2011) "The Economics of Parenting, Self-esteem and Academic Performance: Theory and A Test", *Economica,* Vol. 78(310), pp. 215-239

Deaton, A. (2003) “Health, Inequality, and Economic Development”, *Journal of Economic Literature*, Vol. XLI, pp. 113–158, March

Duflo, E. (2001) “Schooling and Labor Market Consequences of School Construction in Indonesia: Evidence from an Unusual Policy Experiment”, *American Economic Review,* Vol. 91(4), pp. 795-813

Fares, J., J. C. Montenegro and C. Orazem (2006) “How Are Youth Faring in the Labor Market? Evidence from Around the World”, *World Bank Policy Research Working Paper* 4071: World Bank

Ghosal, S., S. Jana, A. Mani, S. Mitra and S. Roy (2015) “Sex Workers, Self-Image and Stigma: Evidence from Kolkata Brothels”, Working Paper, University of Warwick

Goldin, C. (1995) “The U-Shaped Female Labor Force Function in Economic Development and Economic History,” in T. Paul Schultz (Ed.), *Investment in Women’s Human Capital and Economic Development*, Chicago: University of Chicago Press, pp. 61–90

Goldin, C. (2016) “Human Capital” in *Handbook of Cliometrics*, Heidelberg, Germany: Springer Verlag.

Goodman, A. and P. Gregg (2010) (Eds.) *Poorer Children’s Educational Attainment: How Important are Attitudes and Behaviour*?, Joseph Rowntree Foundation, March

Goodman, A., H. Joshi, B. Nasim and C. Tyler (2015) *Social and Emotional Skills in Childhood and their Long-term Effects on Adult Life*, Social Mobility and Child Poverty Commission, UK Cabinet Office

Haushofer, J. and E. Fehr (2014) “On the Psychology of Poverty”, *Science*, 344:862867

Heckman, J. J., Sixrud, J. and Urzua, S. (2006) "The Effects of Cognitive and Non-cognitive Abilities on Labor Market Outcomes and Social Behavior", *Journal of Labor Economics*, Vol. 24(3), pp. 411–482

Hoddinott, J. and L. Haddad (1995) "Does Female Income Share Influence Household Expenditures? Evidence from Cote D'Ivoire", *Oxford Bulletin of Economics & Statistics*, Vol. 57(1), pp. 77–96.

Ibrahim, S. and S. Alkire (2007) "Agency and Empowerment: A Proposal for Internationally Comparable Indicators", *Oxford Development Studies*, Vol. 35(4), pp. 379-403

Imbens, G. W. and J. D. Angrist (1994) "Identification and Estimation of Local Average Treatment Effects", *Econometrica*, Vol. 62(2), pp. 467-475

James, R., M. Anderson, E. Bexley, M. Devlin, R. Garnett, S. Marginson and L. Maxwell (2008) *Participation and Equity: Review of the Participation in Higher Education of People from Low Socioeconomic Backgrounds and Indigenous People*, Universities Australia, Canberra

Kabeer, N. (1999) "Resources, Agency, Achievements: Reflections on the Measurement of Women's Empowerment", *Development and Change*, Vol. 30(3), pp. 435–464

Keyes, C. L. M. (2013) (Ed.) *Mental Wellbeing: International Contributions to the Study of Positive Mental Health*, Dordrecht: Springer

Klein, E. (2014) "Psychological Agency: Evidence from the Urban Fringe of Bamako", *World Development*, Vol. 64, pp. 642–653

Krishnan, P. and S. Krutikova (2013) "Non-cognitive Skill Formation in Poor Neighbourhoods of Urban India", *Labour Economics*, Vol. 24(0), pp. 68-85

Kroenke, K. and R.L. Spitzer (2002) "The PHQ-9: A New Depression Diagnostic and Severity Measure", *Psychiatric Annals*, Vol. 32(9), pp. 509-515

Kuhnen, C. M. and B. T. Melzer (2017) "Non-Cognitive Abilities and Financial Delinquency: The Role of Self-efficacy in Avoiding Financial Distress", *NBER Working paper No. 23028*

Leventhal, K. S., J. Gillham, L. DeMaria, G. Andrew, J. Peabody and S. Leventhal (2015) "Building Psychosocial Assets and Wellbeing among Adolescent Girls: A Randomized Controlled Trial", *Journal of Adolescence*, Vol. 45, pp. 284-295

Lippman, L., K. A. Moore, L. Guzman, R. Ryberg, H. McIntosh, M. Ramos and M. Kuhfeld (2014) *Flourishing Children: Defining and Testing Indicators of Positive Development,* Springer.

Lindqvist, E. and R. Vestman (2011) "The Labor Market Returns to Cognitive and Noncognitive Ability: Evidence from the Swedish Enlistment", *American Economic Journal: Applied Economics*, Vol 3(1), pp. 101-28

Longmore, M. A., W. D. Manning, P. C. Giordano and J. L. Rudolph (2003) "Contraceptive Self-efficacy: Does it Influence Adolescents' Contraceptive Use?", *Journal of Health and Social Behaviour*, Vol. 44(1), pp. 45–60

Luszczynska, A., B. Gutierrez-Dona and R. Schwarzer (2005) "General Self-efficacy in Various Domains of Human Functioning: Evidence from Five Countries", *International Journal of Psychology*, Vol. 40(2), pp. 80-89

Mello, Z. R. (2008) "Gender Variation in Developmental Trajectories of Educational and Occupational Expectations and Attainment from Adolescence to Adulthood"

Developmental Psychology, Vol. 44(4), pp. 1069–1080

Messersmith, E. E. and J. E. Schulenberg (2010). "Goal Attainment, Goal Striving, and Well-being During the Transition to Adulthood: A Ten-year US National Longitudinal Study" *New Directions for Child and Adolescent Development*, 2010(130), pp. 27-40

Miguel, E. and M. Kremer (2004) "Worms: Identifying Impacts on Education and Health in the Presence of Treatment Externalities", *Econometrica*, Vol. 72(1), pp. 159–217

Morton, M., J. Klugman, L. Hanmer and D. Singer, (2014) *Gender at Work: A Companion to the World Development Report on Jobs* (English), Washington, DC: World Bank Group

Motl, R. W., R. K. Dishman, R. P. Saunders, M. Dowda and R. R. Pate (2007) "Perceptions of Physical and Social Environment Variables and Self-efficacy as Correlates of Self-Reported Physical Activity among Adolescent Girls", *Journal of Paediatric Psychology*, Vol. 32 (1), pp. 6–12

Nehru, V., E. Swanson and A. Dubey (1995) "A New Database on Human Capital Stock in Developing and Industrial Countries: Sources, Methodology and Results", *Journal of Development Economics,* Vol. 46(2), pp. 379-401.

Pajares, F. (2006) "Self-efficacy during Childhood and Adolescence: Implications for Teachers and Parents", in F. Pajares & T. Urdan (Eds.), *Adolescence and Education: Self-efficacy Beliefs of Adolescents* (Vol. V, pp. 339-366), Greenwich: Information Age Publishing

Pinquart, M., L. P. Juang and R. K. Silbereisen (2003) "Self-efficacy and Successful School-to-Work Transition: A Longitudinal Study", *Journal of Vocational Behavior*, Vol. 63(3), pp. 329-346

Quisumbing, A. R. and J. A. Maluccio (2003) "Resources at Marriage and Intra-household Allocation: Evidence from Bangladesh, Ethiopia, Indonesia, and South Africa", *Oxford Bulletin of Economics and Statistics*, Vol. 65(3), pp. 283–327

Schoon, I. and S. Parsons (2002) "Teenage Aspirations for Future Careers and Occupational Outcomes", *Journal of Vocational Behavior*, Vol. 60(2), pp. 262–288

Schoon, I., P. Martin and A. Ross (2007) "Career Transitions in Times of Social Change: His and Her Story", *Journal of Vocational Behavior*, Vol. 70(1), pp. 78–96

Schoon, I. and E. Polek (2011) "Teenage Career Aspirations and Adult Career Attainment: The Role of Gender, Social Background and General Cognitive Ability", *International Journal of Behavioral Development*, Vol. 35(3), pp. 210–217

Schoon I. and M. Lyons-Amos (2017) "A Socio-ecological Model of Agency: The Role of Structure and Agency in Shaping Education and Employment Transitions in England", *Longitudinal and Life Course Studies*, Vol. 8(1), pp. 35-56

Schwarzer, R. and M. Jerusalem (1995) "Generalized Self-Efficacy scale", in J. Weinman, S. Wright & M. Johnston (Eds.), *Measures in Health Psychology: A User's Portfolio: Causal and Control Beliefs*, (pp. 35-37), Windsor, UK: Nfer-Nelson

Sen, A. (1992) *Inequality re-examined*, Oxford University Press

Sen, A. (1993) "Capability and Well-being", in M. C. Nussbaum and A. Sen (Eds.), *The Quality of Life*, Oxford: Clarendon Press

Sen, A. (1999) *Development as Freedom*, New Delhi, Oxford: Oxford University Press

Watkins, J. A., E. M. Howard-Barr, M. J. Moore, J. Michele and C. C. Werch (2006) "The Mediating Role of Adolescent Self-efficacy in the Relationship between Parental Practices and Adolescent Alcohol Use", *Journal of Adolescent Health*, Vol. 38 (4), pp. 448–450

Wilson, T. D. (2011) *Redirect: The Surprising New Science of Psychological Change*, Penguin Group, London

World Bank (2014) *World Development Report 2015: Mind, Society and Behavior*, World Bank: Washington, D.C.

Zimmerman, M. (2000) "Empowerment Theory: Psychological, Organizational and Community Levels of Analysis", in J. Rappaport and E. Seidman (Eds.), *Handbook of Community Psychology*, pp. 43-63, Dordrecht, Netherlands: Kluwer Academic Publishers

Appendix A

Table A1: Self-efficacy and Education Aspirations of Young Women (15-17 year olds)

	(1)	(2)	(3)	(4)	(5)
	Education Aspirations				
Hope (z-score)	0.14	-0.01	-0.05	-0.11	-0.07
	(0.09)	(0.09)	(0.09)	(0.12)	(0.10)
Self-efficacy (z-score)		0.59***	0.44***	0.34***	0.38***
		(0.08)	(0.09)	(0.11)	(0.09)
Age (years)	0.43***	0.36***	0.31***	0.25*	0.20*
	(0.10)	(0.10)	(0.10)	(0.13)	(0.10)
NEET (0/1)	-2.00***	-1.85***	-1.31***	-1.39***	-1.21***
	(0.19)	(0.19)	(0.20)	(0.27)	(0.22)
Married (0/1)	-1.24***	-1.03***	-0.88**	-1.35**	-0.44
	(0.35)	(0.35)	(0.37)	(0.56)	(0.47)
Father's age (years)			-0.01	-0.01	-0.01
			(0.01)	(0.01)	(0.01)
Mother's age (years)			0.01	0.00	0.02*
			(0.01)	(0.01)	(0.01)
Father's education (years)			0.05**	0.04	0.03
			(0.02)	(0.03)	(0.02)
Mother's education (years)			0.08***	0.05*	0.08***
			(0.02)	(0.03)	(0.03)
Household size			-0.01	-0.01	0.01
			(0.04)	(0.05)	(0.04)
Log annual HH income			0.16*	0.11	0.03
			(0.09)	(0.10)	(0.10)
Caste=SC			-0.29	-0.14	-0.75*
			(0.33)	(0.35)	(0.41)
Caste=ST			-0.89**	-0.55	-1.12***
			(0.35)	(0.38)	(0.42)
Caste=OBC			-0.06	0.10	-0.30
			(0.29)	(0.31)	(0.35)
Religion=Muslim			-0.49*	-0.17	-0.26
			(0.26)	(0.31)	(0.38)
Religion=Christian			0.19	-0.66	-0.36
			(0.43)	(0.47)	(0.59)
Religion=Sarna			0.17	-0.23	-0.12
			(0.31)	(0.49)	(0.43)
Has BPL card			-0.11	-0.12	-0.07
			(0.16)	(0.20)	(0.17)
Lack of social support (0-9)			0.02	-0.02	-0.02
			(0.06)	(0.06)	(0.07)
Knows women in business (0/1)			0.78***	0.29	0.53***
			(0.16)	(0.20)	(0.18)
Adult connectedness (0-4)			0.02	0.12	0.07
			(0.08)	(0.10)	(0.09)
Area poorer than rest				-0.44	
				(0.30)	
Area has women in GP				-0.03	
				(0.25)	
Area thinks married women should work				0.34	
				(0.27)	
Area thinks son's education more imp				-0.38	
				(0.28)	
Area has primary school				0.37	
				(0.55)	
Area has high school				-0.14	
				(0.31)	

Area has crime				0.13	
				(0.46)	
Urban				0.59**	
				(0.25)	
Area fixed effects	No	No	No	No	Yes
Adj. R-sq	0.15	0.19	0.26	0.24	0.36
N	997	997	909	532	909

Notes: The sample consists of young women who were 15-17 years old inclusive. Standard errors, in parentheses, are clustered at the area level. Area refers to enumeration area (EA). * significant at 10 percent, ** significant at 5 percent, *** significant at 1 percent. The dependent variable is number of years of education a girl reports to aspiring to if she faced no constraints. The omitted caste group is General Caste and the omitted religious group is Hindu. The hope variable is a standardized z-score constructed from answers given to the following three questions on: 'expect good things to happen to me'; 'excited about future'; 'trust future will turn out well'. The self-efficacy variable is a standardized z-score constructed from answers given to the following ten questions on: 'can solve difficult problems if try hard enough'; 'can get what I want'; 'can stick to and reach goals'; 'can deal with unexpected events'; 'can handle unexpected situations due to my talent/skills'; 'can solve most problems if try hard enough'; 'can stay calm in difficulty'; 'can find several ways to solve a problem'; 'can think of a solution when in trouble'; 'can handle whatever comes my way'.

Table A2: Self-efficacy and Education Aspirations of Young Women (15-17 year olds): Rural-Urban

	(1)	(2)	(3)
	Education Aspirations		
	All	Rural	Urban
Hope (z-score)	-0.07	-0.02	-0.14
	(0.10)	(0.12)	(0.16)
Self-efficacy (z-score)	0.38***	0.42***	0.33*
	(0.09)	(0.11)	(0.18)
Age (years)	0.20*	0.30**	-0.06
	(0.10)	(0.12)	(0.19)
NEET (0/1)	-1.21***	-1.40***	-0.72
	(0.22)	(0.19)	(0.60)
Married (0/1)	-0.44	-0.12	-2.01
	(0.47)	(0.47)	(1.36)
Father's age (years)	-0.01	-0.01	0.01
	(0.01)	(0.01)	(0.02)
Mother's age (years)	0.02*	0.03*	-0.00
	(0.01)	(0.02)	(0.02)
Father's education (years)	0.03	0.03	0.03
	(0.02)	(0.03)	(0.05)
Mother's education (years)	0.08***	0.10**	0.05
	(0.03)	(0.04)	(0.05)
Household size	0.01	-0.01	0.06
	(0.04)	(0.04)	(0.06)
Log annual HH income	0.03	0.11	-0.17
	(0.10)	(0.13)	(0.18)
Caste=SC	-0.75*	-0.47	-0.98*
	(0.41)	(0.48)	(0.58)
Caste=ST	-1.12***	-0.84*	-0.95
	(0.42)	(0.50)	(0.72)
Caste=OBC	-0.30	0.06	-0.58
	(0.35)	(0.43)	(0.50)
Religion=Muslim	-0.26	-0.35	0.04
	(0.38)	(0.48)	(0.46)
Religion=Christian	-0.36	-0.61	0.28
	(0.59)	(0.72)	(0.90)
Religion=Sarna	-0.12	-0.38	1.63*
	(0.43)	(0.45)	(0.81)
Has BPL card	-0.07	-0.09	-0.08
	(0.17)	(0.19)	(0.39)
Lack of social support (0-9)	-0.02	0.05	-0.17
	(0.07)	(0.08)	(0.13)

Knows women in business (0/1)	0.53***	0.52**	0.65
	(0.18)	(0.20)	(0.43)
Adult connectedness (0-4)	0.07	0.03	0.17
	(0.09)	(0.11)	(0.19)
Area fixed effects	Yes	Yes	Yes
Adj. R-sq	0.36	0.37	0.16
N	909	641	268

Notes: The sample consists of young women who were 15-17 years old inclusive. Standard errors, in parentheses, are clustered at the area level. Area refers to enumeration area (EA). * significant at 10 percent, ** significant at 5 percent, *** significant at 1 percent. The dependent variable is number of years of education a girl reports to aspiring to if she faced no constraints. The omitted caste group is General Caste and the omitted religious group is Hindu. The hope variable is a standardized z-score constructed from answers given to the following three questions on: 'expect good things to happen to me'; 'excited about future'; 'trust future will turn out well'. The self-efficacy variable is a standardized z-score constructed from answers given to the following ten questions on: 'can solve difficult problems if try hard enough'; 'can get what I want'; 'can stick to and reach goals'; 'can deal with unexpected events'; 'can handle unexpected situations due to my talent/skills'; 'can solve most problems if try hard enough'; 'can stay calm in difficulty'; 'can find several ways to solve a problem'; 'can think of a solution when in trouble'; 'can handle whatever comes my way'.

Table A3: Self-efficacy, Education Aspirations and School Attendance of Young Women (15-17 year olds)

	(1)	(2)	(3)	(4)	(5)
	Attends school				
Hope (z-score)	0.03*	0.03*	0.02	0.01	0.04**
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Self-efficacy (z-score)	0.06***	0.02	0.00	0.01	-0.01
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Education Aspiration		0.05***	0.04***	0.03***	0.04***
		(0.01)	(0.01)	(0.01)	(0.01)
Age (years)	-0.10***	-0.10***	-0.10***	-0.09***	-0.08***
	(0.02)	(0.02)	(0.02)	(0.03)	(0.02)
Married (0/1)	-0.38***	-0.28***	-0.23***	-0.16*	-0.15**
	(0.04)	(0.05)	(0.05)	(0.09)	(0.06)
Father's age (years)			-0.00	-0.00	-0.00
			(0.00)	(0.00)	(0.00)
Mother's age (years)			0.00	0.00	0.00
			(0.00)	(0.00)	(0.00)
Father's education (years)			0.01*	0.00	0.01
			(0.00)	(0.01)	(0.00)
Mother's education (years)			0.01	0.01	0.01*
			(0.00)	(0.01)	(0.01)
Household size			0.00	0.02	0.01
			(0.01)	(0.01)	(0.01)
Log annual HH income			-0.00	-0.01	-0.04
			(0.02)	(0.02)	(0.02)
Caste=SC			0.04	0.08	0.11
			(0.07)	(0.10)	(0.09)
Caste=ST			0.09	0.06	0.20**
			(0.07)	(0.10)	(0.09)
Caste=OBC			0.11*	0.17*	0.17**
			(0.06)	(0.08)	(0.07)
Religion=Muslim			-0.02	-0.04	-0.03
			(0.05)	(0.05)	(0.06)
Religion=Christian			-0.02	-0.07	-0.04
			(0.10)	(0.19)	(0.15)
Religion=Sarna			-0.08	-0.00	-0.14
			(0.08)	(0.11)	(0.10)
Has BPL card			0.01	0.03	0.02
			(0.03)	(0.04)	(0.04)
Lack of social support (0-9)			-0.02	-0.02	-0.03**
			(0.01)	(0.01)	(0.01)

Knows women in business (0/1)			0.04	0.04	0.02
			(0.03)	(0.04)	(0.04)
Adult connectedness (0-4)			0.12***	0.11***	0.11***
			(0.01)	(0.02)	(0.02)
Area poorer than rest				0.09*	
				(0.05)	
Area has women in GP				0.06	
				(0.05)	
Area thinks married women should work				0.05	
				(0.05)	
Area thinks son's education more imp				-0.03	
				(0.06)	
Area has primary school				-0.07	
				(0.10)	
Area has high school				0.01	
				(0.05)	
Area has crime				-0.01	
				(0.09)	
Urban				0.01	
				(0.05)	
Area fixed effects	No	No	No	No	Yes
Adj. R-sq	0.08	0.14	0.21	0.15	0.28
N	1048	997	909	532	909

Notes: The sample consists of young women who were 15-17 years old inclusive. Standard errors, in parentheses, are clustered at the area level. Area refers to enumeration area (EA). * significant at 10 percent, ** significant at 5 percent, *** significant at 1 percent. The dependent variable is a binary variable that take the value 1 if the individual reports attending school and 0 otherwise. The omitted caste group is General Caste and the omitted religious group is Hindu. The hope variable is a standardized z-score constructed from answers given to the following three questions on: 'expect good things to happen to me'; 'excited about future'; 'trust future will turn out well'. The self-efficacy variable is a standardized z-score constructed from answers given to the following ten questions on: 'can solve difficult problems if try hard enough'; 'can get what I want'; 'can stick to and reach goals'; 'can deal with unexpected events'; 'can handle unexpected situations due to my talent/skills'; 'can solve most problems if try hard enough'; 'can stay calm in difficulty'; 'can find several ways to solve a problem'; 'can think of a solution when in trouble'; 'can handle whatever comes my way'.

Appendix B

Self-efficacy and Aspirations: An IV Approach

In an attempt to identify the causal impact of self-efficacy on aspirations, we utilize an instrumental variable strategy using exposure to shocks as an instrument for self-efficacy. Existing literature argues that self-efficacy can change dramatically when exposed to a shock (Wyepper and Lybbert, 2017; Boyd *et al*, 2011; Heinrich, 2015). Individuals may (mis-)interpret a random shock as a signal about their ability and self-efficacy, and hence change their behavior accordingly (Hausofer and de Quidt, 2017).

The particular type of shock we use as an instrument is the incidence of hospitalization in the adolescent women's household in the last three years. We measure this using a binary variable that takes the value 1 if there has been such an incidence in the last 3 years, and 0 otherwise. Facing a challenging situation such as a health shock in the family can be predicted to have an impact on the adolescent's self-efficacy. Thus the relevance restriction is likely to be satisfied. The other key condition that the instrument needs to satisfy is the exclusion restriction: i.e. the only way through which hospitalization can impact an adolescent's aspirations is through its impact on her self-efficacy. It is plausible to argue that health shocks and therefore episodes of hospitalization are randomly distributed and hence should not be correlated with other (household) factors that may also affect aspirations of the young women. That said, one may still argue that members of poorer households (esp. below poverty line) may be more likely to fall sick and hence need hospitalization, and also suffer from low aspirations. To address this concern, we control for below-poverty-line (BPL) status measured using BPL card ownership in our IV regressions.

The results for education aspirations are presented in Table B1. Column 1 presents the first stage between the endogenous regressor (self-efficacy) and the instrument (incidence of shock). The *F*-statistic is 25.3, which reveals a strong first stage. It is interesting to note that the coefficient is positive and significant: being exposed to a hospitalization shock is associated with a higher sense of self-efficacy among adolescent women. One potential explanation is that conditional on being hit by a health shock, playing a part in successfully admitting the sick person to the hospital constitutes an affirmative step towards tackling the problem, which in turn may have a positive impact on the adolescent's sense of self-efficacy and competence.

Column 2 presents the IV estimates of the impact of self-efficacy on education aspirations. The coefficient on self-efficacy is positive and significant, indicating that higher self-efficacy leads to higher education aspirations among these adolescent girls and young women. The IV coefficient is much larger than its OLS counterpart estimated in Table 2 and may be attributed to the fact that IV may be picking up local average treatment effects (Imbens and Angrist, 1994). Controlling for below-poverty-line (BPL) status of household does not change the results (Column 3-4).

Table B1: Self-efficacy and Education Aspirations of Young Women: IV Results

	(1)	(2)	(3)	(4)
	Self-efficacy	Education Aspiration	Self-efficacy	Education Aspiration
	First stage	IV	First stage	IV
Self-efficacy		3.96**		4.16**
		(1.81)		(2.13)
Shock	0.10**		0.09**	
	(0.04)		(0.04)	
Has BPL card			-0.20***	0.29
			(0.04)	(0.49)
Controls	Yes	Yes	Yes	Yes
F-statistic	25.30		24.77	
N	2106	2106	2101	2101

Notes: The sample consists of adolescent girls and young women who were 15-24 years old inclusive. Standard errors, in parentheses, are clustered at the area level. Area refers to enumeration area (EA). * significant at 10 percent, ** significant at 5 percent, *** significant at 1 percent. Education aspiration measures the number of years of education a girl reports to aspiring to if she faced no constraints. The self-efficacy variable is a standardized z-score constructed from answers given to the following ten questions on: 'can solve difficult problems if try hard enough'; 'can get what

I want'; 'can stick to and reach goals'; 'can deal with unexpected events'; 'can handle unexpected situations due to my talent/skills'; 'can solve most problems if try hard enough'; 'can stay calm in difficulty'; 'can find several ways to solve a problem'; 'can think of a solution when in trouble'; 'can handle whatever comes my way'. Shock is a binary variable that captures if a family member has been hospitalized in the past 3 years. Controls include age, NEET status and marital status of individual.

The results for employment aspirations are presented in Table B2. Here too we find a strong first stage (*F*-statistic 24.6) in Column 1. Column 2 presents the IV estimates. The coefficient on self-efficacy is positive and significant, indicating that higher self-efficacy leads to higher employment aspirations too. The results remain robust to the inclusion of below-poverty-status of the household (Columns 3-4).

Table B2: Self-efficacy and Employment Aspirations of Young Women: IV Results

	(1)	(2)	(3)	(4)
	Self-efficacy	Employment Aspiration	Self-efficacy	Employment Aspiration
	First stage	IV	First stage	IV
Self-efficacy		0.60**		0.66*
		(0.30)		(0.38)
Shock	0.09**		0.08*	
	(0.04)		(0.04)	
Has BPL card			-0.20***	0.11
			(0.04)	(0.08)
Controls	Yes	Yes	Yes	Yes
F-statistic	24.62		24.34	
N	2388	2388	2382	2382

Notes: The sample consists of adolescent girls and young women who were 15-24 years old inclusive. Standard errors, in parentheses, are clustered at the area level. Area refers to enumeration area (EA). * significant at 10 percent, ** significant at 5 percent, *** significant at 1 percent. Employment aspiration is a binary variable that takes the value 1 if the individual reports being engaged in paid work/income generating activity over the last 12 months and 0 otherwise. The self-efficacy variable is a standardized z-score constructed from answers given to the following ten questions on: 'can solve difficult problems if try hard enough'; 'can get what I want'; 'can stick to and reach goals'; 'can deal with unexpected events'; 'can handle unexpected situations due to my talent/skills'; 'can solve most problems if try hard enough'; 'can stay calm in difficulty'; 'can find several ways to solve a problem'; 'can think of a solution when in trouble'; 'can handle whatever comes my way'. Shock is a binary variable that captures if a family member has been hospitalized in the past 3 years. Controls include age, NEET status and marital status of individual.

Endnotes

[i] We use the term "non-cognitive skills" (like self-efficacy) to capture abilities that are distinct from the traditional measures of human capital like education and training. We acknowledge that this terminology is not perfect, as many psychologists argue that by definition, concepts like self-efficacy are cognitive self-evaluations and that most character traits considered as non-cognitive involve some form of cognition.

[ii] In a related sense, Bernard et al (2014) find that videos of successful local role models affected investment in children's education and other future-oriented behaviors.

[iii] This study used the National Institutes of Health Toolbox adapted and validated version (CAT Ages 8-12) of the GSES given simpler language for a young sample population with generally low literacy. The version was retrieved from http://www.nihtoolbox.org/WhatAndWhy/Emotion/Pages/default.aspx.

[iv] This proportion is significantly higher than the average (36%) for other developing countries reported in Fares *et al* (2006).

[v] For the group of girls aged 15-17 years, 51% of them report attending school.

[vi] This disparity exists even for those who are of working age i.e. 18-24 years of age. 85% of this group aspires to be gainfully employed while only 13% actually are.

[vii] Scheduled castes (SC) are groups belonging to the lowest caste in the Hindu social hierarchy (formerly known as "untouchables") e.g. Dalits. Scheduled Tribes (ST) are tribal groups that suffer social exclusion and discrimination due to their ethnicity. Other Backward Classes (OBC) comprise of other caste groups occupying low positions in the caste hierarchy. Together, SC and ST and OBC constitute the historically disadvantaged socio-economic groups in Indian society. After independence, the Constitution of India

authorized special preferential treatment (e.g. through quotas) for SC, ST and OBC groups to redress such historical discrimination.

[viii] This negative association between income and female labour force participation (FLFP) suggests that we should exercise caution in automatically associating a positive valence to the latter. However, as Goldin (1995) argues, the long-term association between income and FLFP is U-shaped. In other words, at low levels of income, FLFP is high due to the necessity to make ends meet, but it declines when income increases moderately and rises again when income is high. Hence, following structural change and economic development, a higher FLFP rate would be symptomatic of an economic system where women are equal contributors to the production process as men that boosts both efficiency and equity.